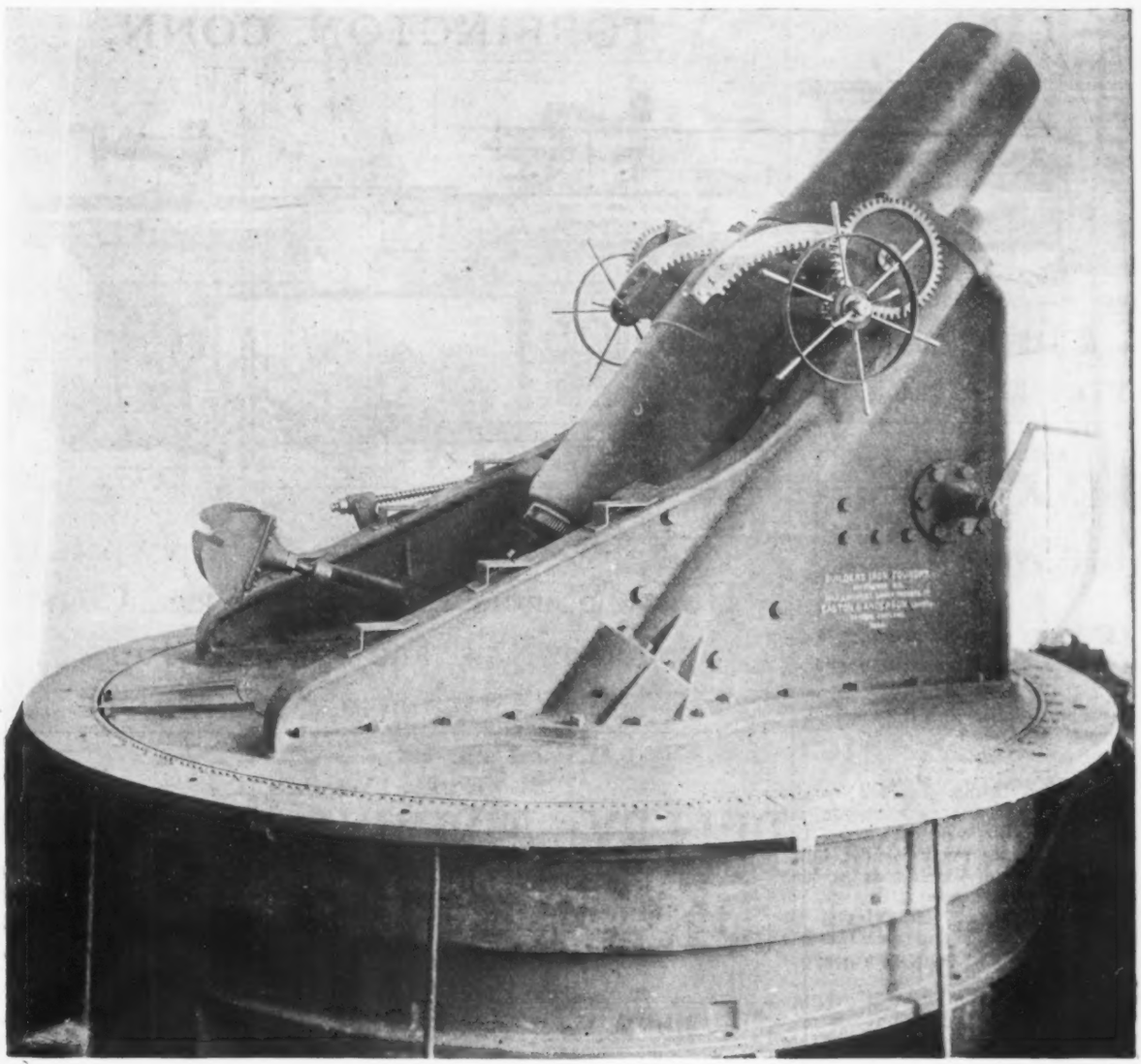
THE IRON AGE

THURSDAY, JUNE 1, 1893.

Spring Return 12-Inch Mortar Carriage.

The mortar carriage of which the accompanying engravings show all the main points is a combination of an English (Easton & Anderson) and a Russian (Riskazoff) invention, its principal feature being the arrangement of spring and hydraulic cylinders to take the recoil.



SPRING RETURN 12-INCH MORTAR CARRIAGE.

The lower carriage is made up of two gun-iron rings, placed one upon the other, and separated by a live roller ring of steel and wrought iron. The upper carriage consists of a transom and two side frames containing the necessary mechanism for carrying the mortar, these parts being made entirely of gun iron and being attached permanently to the upper ring of the lower carriage.

The lower ring, termed the lower base ring, is attached permanently to the masonry by the holding-down bolts, while the upper ring, known as the upper base ring, revolves freely upon it, by means of the intervening live roller ring.

The mortar is mounted on two cast-steel trunnion carriages, sliding on the two side frames. To each of these trunnion carriages is attached a piston rod, working in a cast steel dydraulic cylinder permanently attached to the side frame. At the same time the trunnion carriages are connected by means of the compression screw with the nest of springs contained in the spring cylinders, the upper sections of which are cast into and form part of the side frames.

These spring and hydraulic cylinders are inclined to the horizon at an angle of 50 degrees, and the mortar is arranged to fire only between angles of 35 and 60 degrees, so that the force of the recoil can be directly taken up by these cylinders, and but little lateral strain will be communicated to the upper base ring. After the recoil the elastic force of the springs will usually return the mortar into battery. Should this fail, hand bars working in ratchets cut into the side frame will accomplish the result readily.

The lower base ring is cast from gun iron in a single piece, and weighs about 8 tons; it is 14 feet in diameter, and has on the lower sides an inner and outer set of holes to receive the holding down bolts, which are imbedded in the masonry. The upper side has a groove cast into it to serve as a guide for the flange of the conical rollers in the live roller ring. On the interior of this ring is a training gear of gun iron, made in six sections and bolted to

the ring. The live roller ring consists of an inner and an outer hoop of rolled iron and 24 steel conical rollers. Each hoop is divided into two sections of 180° each, which are kept apart by by 12 separators made of cast iron and having a 1¼-inch bolt clamping them. These hoops are cut out to fit over the trunnion of the steel conical rollers. To protect these rollers from dust there is attached a guard plate of wrought iron, screwed to the upper base ring, the whole when bound together readily revolving upon the path cast in the upper face of the lower base ring. The upper base ring overhangs the lower one for a depth of 3 inches, and in such a way as to leave a small amount of play between them. This ring is cast from gun iron in a single piece, is nearly 14 feet in diameter, and weighs about 12 tons. On the under side it has paths or grooves cast into it to fit over the conical rollers of the live roller ring. On a projecting flange on the upper side the cast-iron floor is screwed, and placed immediately in the rear and fastened in the same way are two cast iron guides which serve as a track for the shot barrow. Still in the rear of these is screwed the training index finger, graduated to minutes. There is also bolted to the upper base ring the right and left hand side frames for carrying the mortar; these are straightened and held apart by the transom, which is bolted to them and to the upper base ring.

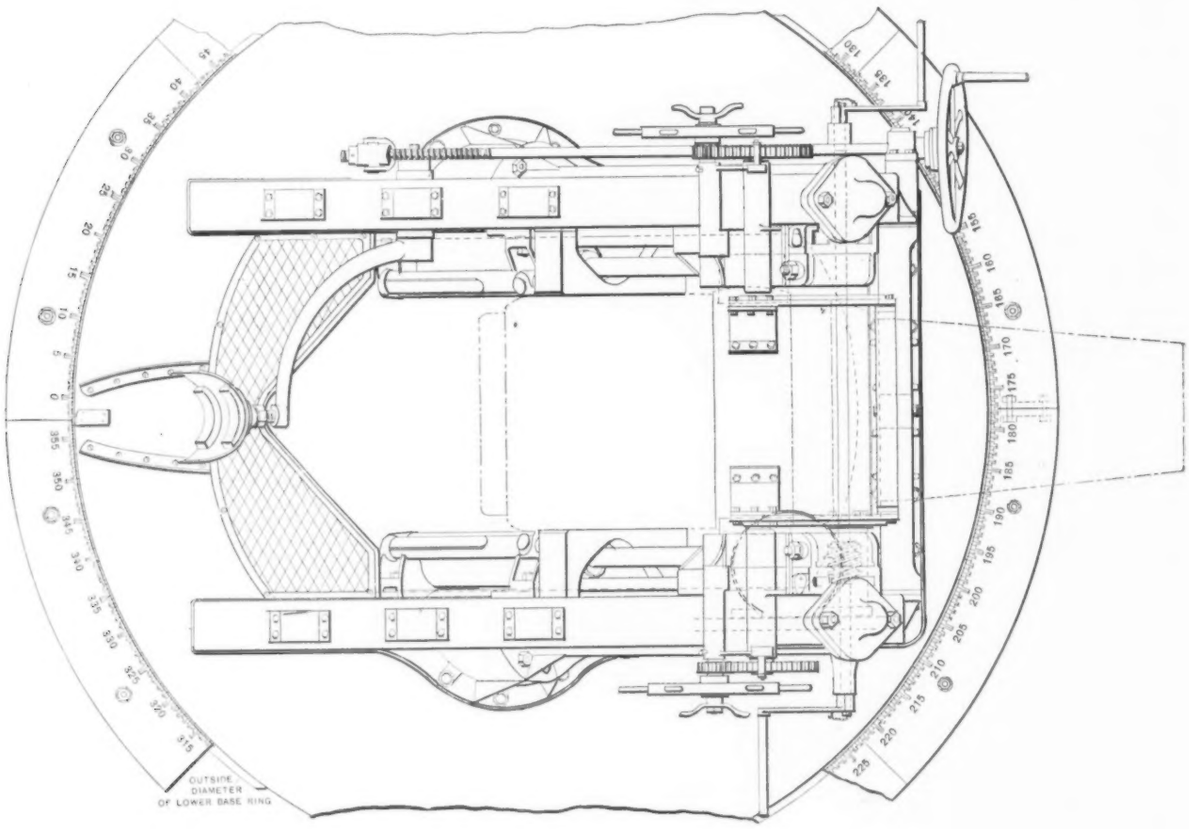
On the lower extremity of the vertical forged steel training shaft is a training pinion of bronze which works in an internal training gear, while on the upper end is a training gear working in the worm on the horizontal training shaft.

The right-hand frame of the upper carriage is cast from gun iron and weighs 3 tons. Screwed to its inclined face are three steps of wrought iron, while to its side is bolted a gun-iron guide for directing the mortar into position and to protect the hydraulic cylinders. Cast into the frame is a cylinder for holding the springs; this is extended below the side frame by an additional casting bolted to it, and its upper end is closed by an iron cap.

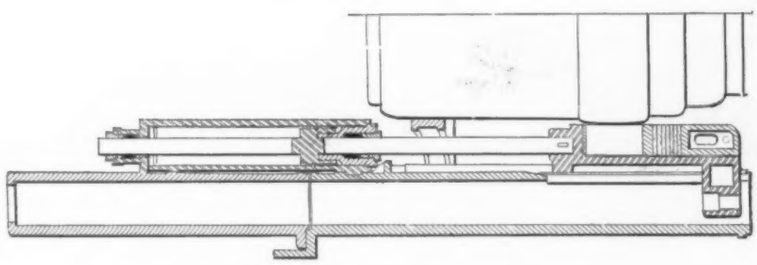
Passing through both side frames is the horizontal training shaft of forged steel. On the right hand side frame are bolted outer and inner cast-iron brackets through which this shaft works. On the left-hand side frame there is but one bracket for this shaft to work through. On this shaft, between the frames, is mounted a worm, engaging with a worm gear on the horizontal training shaft. At each end of this latter shaft is a crank. The construction is such that with a man at each crank the upper base ring and its load can be revolved readily.

The left-hand side frame is similar to the right-hand one, with the exception noted above, and has in addition attached to it the leading mechanism. This last consists of a forged steel loading arm, terminating at one end in the loading scoop, made of wrought iron and lined with hard-wood strips. For regulating its hight there is a stud and check nut of forged steel. To the other end of the loading arm is attached the forged steel lever loading arm, which is forked at its extremity to receive a bronze swivel nut through which works the threaded portion of a forged steel loading screw. At the front end of the side frame is the bronze swivel bearing through which the loading screw works, the bracket for which is bolted to the frame. At the front end of the loading screw is attached a cast iron hand wheel which has a forged-iron handle cased with bronze tubing.

Connecting and stiffening the two side frames is the gun-iron transom, weighing 1¼ tons. For a rest for the muzzle of the mortar, when in a loading position, there is attached to the transom a buffer, made up of ten pieces of ⅝-inch thick felt and two pieces of sheet iron for separators, all surrounded



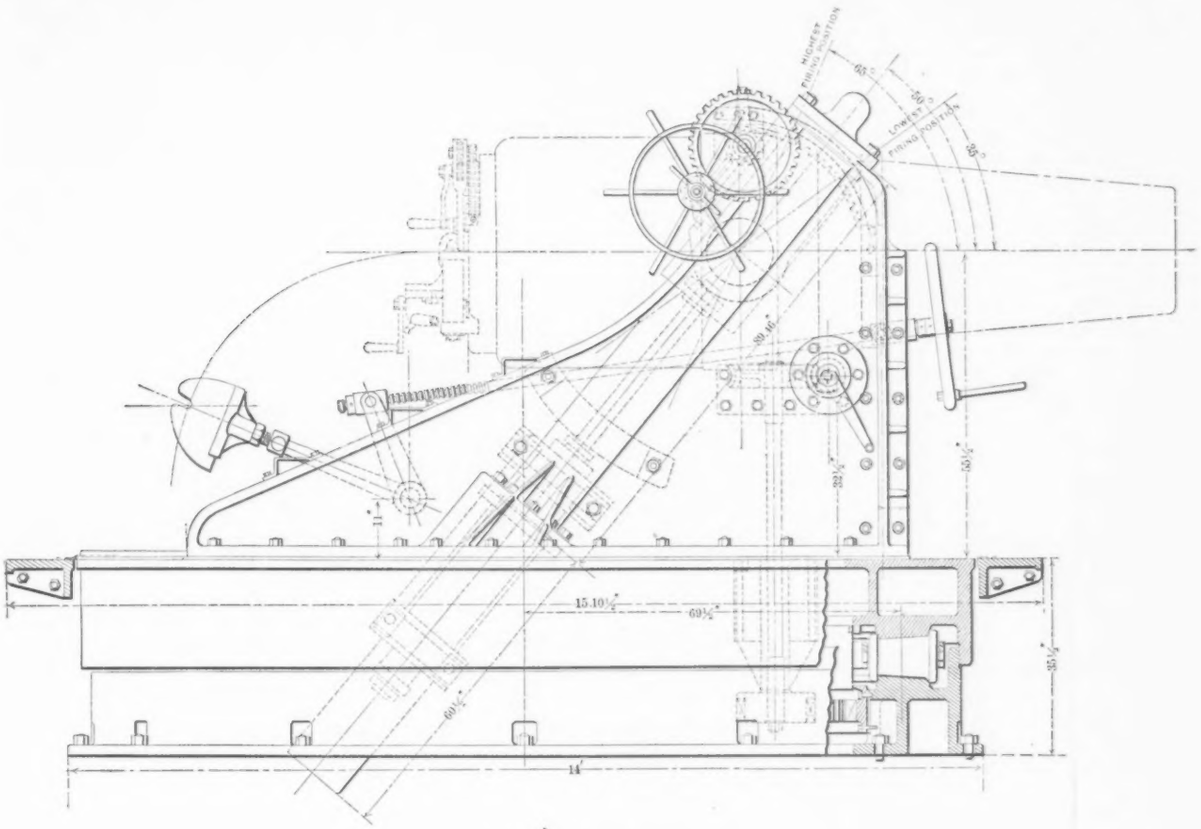
Plan.



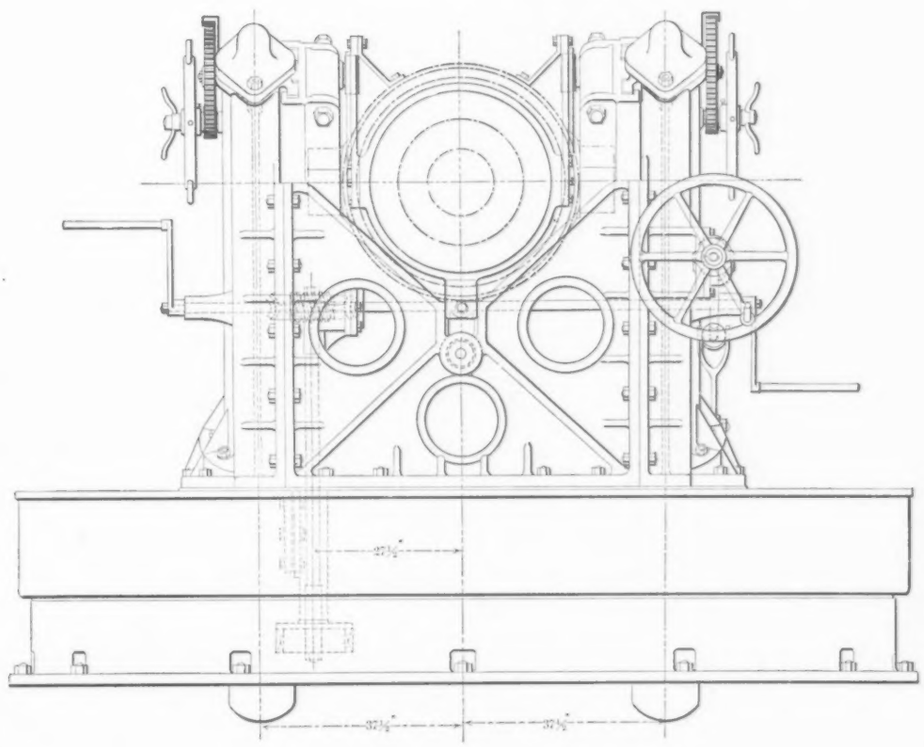
Section Hydraulic Cylinder.

SPRING RETURN 12-INCH MORTAR CARRIAGE.

by a sheet-iron protector. The transom also has a buffer stop of hard wood to check the breech of the mortar when weighing nearly 1 ton each. These work on tongues cast on the side frame, the friction sides of which have bronze mortar is placed in the carriage a set of buffer felts with separators is placed on the upper side of each trunnion, to act



Sectional Side Elevation.



Front End Elevation.

SPRING RETURN 12-INCH MORTAR CARRIAGE.

the piece is elevated to its highest firing position.

To hold and carry the mortar there are two trunnion carriages of cast steel, gibs riveted to and screwed on to them, while the circular portion in which the trunnion of the mortar rests is also lined with bronze. After the as a cushion when the mortar is returned to battery. On top of these buffers is placed the cast iron trunnion seat cap, and to hold them in position there is

bolted over all a cast iron holding-down cap. For the purpose of lubrication two oil holes are placed in each carriage, these holes being protected by covers fitted to them. On the lug on this carriage is attached the spring compression, screw, which rests on the springs in the cylinder, separated from them by a hardened steel washer to take up the wear.

The two hydraulic cylinders are made of cast steel, and are tested to resist a pressure of 8000 pounds. One is bolted to each side frame, and also to the lower section of the spring cylinder. These have forged steel piston rods attached to the trunnion carriages at one end and working in the cylinder at the other. The two cylinders are connected with each other by means of pipes to correct any inequality of pressure, and they are also arranged to permit the flow of the liquid from the rear to the front of the piston heads, which flow can be regulated by means of plugs.

For the purpose of inserting the springs in the cylinders there is furnished with each carriage one inserting spring bolt 16 feet long.

For elevating and depressing the mortar there is shrunk on it, just in front of the trunnion hoop, a steel mortar band, to which are bolted two wrought-iron elevating gear brackets, to each of which is attached a bronze elevating gear. These gears work in forged steel pinions attached to a bronze gear wheel, which in turn works in forged steel pinions of the hand wheels. These wheels have a cast-iron hub with wrought-iron rim and spokes extended through the rim to serve as handles. At the end of the shaft on which the hand wheel works is a forged iron clamping nut which rigidly holds the piece in any position desired, and an index finger extends over the bronze gear wheel to serve as a guide in elevating the mortar.

Outside of the upper base ring and on line with its upper surface there is permanently attached to the masonry a cast-iron index ring divided into half degrees. This is made of cast iron and cast into arcs of 45° for convenience of handling, as the complete circle weighs 2 tons.

Furnished with each carriage is a pair of shot tongs and a shot truck of forged iron and steel made to carry either the 600, 800 or 1000 pound shot. This truck is so arranged that by running it on the upper base ring the loading scoop readily picks up the projectile and carries it to the breech of the mortar.

These carriages are built by the Builders' Iron Foundry, Providence, R. I., whose work in connection with the 12-inch mortars we have described and illustrated very fully in former issues.

It is officially shown that the total immigration from Japan into the United States from 1861 to 1892, inclusive, has aggregated 5271. During this time many of these have returned and some have died, so that the present number of Japanese in the United States is quite inconsiderable.

The enormous icebergs from the Antarctic Ocean reported by ships going around Cape Horn suggest the probability that the temperature in the Southern Ocean was unusually high last summer, and that the opportunity may be favorable for discovering the vastness of the continent at the South Pole.

Lalance & Grosjean Mfg. Company's Works.

As the pioneers of seamless stamping and sheet-iron enameled ware manufacture in the United States, the Lalance & Grosjean Mfg. Company of Woodhaven, L. I., and Harrisburg, Pa., have a justly deserved reputation, while the fame of their agate ware extends far beyond the limits of the United States. It is probable that the familiar trade-mark of the firm, affixed to articles of their manufacture, is known in almost every corner of the globe. A story is even related, as strictly veracious, to the effect that one of the members of a recent polar expedition picked up an agate ware cup at nearly as high a latitude as has ever been reached by man; a relic, doubtless, of some former explorers in that icy region.

The following brief mention of the rise of this important industrial establishment will be of interest:

The firm of Lalance & Grosjean is one of over 40 years' standing. The present head of the concern was one of the original founders. He is Florian Grosjean, a native of Switzerland, who in early life emigrated to the United States. About the year 1850, he started in business in a small way with a compatriot, W. Lalance, as importers of sheet metal culinary vessels. These articles the partners shortly commenced to manufacture for themselves on a limited scale in the city of New York. Prospering in their undertaking, they moved, in 1863, to Woodhaven, Long Island, where they built a factory, employing from 75 to 100 hands. In 1869, the business having increased in size and importance, the firm was incorporated under its present title, and continued thriving until February, 1876, when the whole plant was destroyed by fire. The buildings were, however, quickly re erected, and on a much more extensive scale than before; so that in July of the same year, after a stoppage of but five months, the works were again in full operation. Since that period the history of the Lalance & Grosjean Mfg. Company has been one of unbroken progress and prosperity, until they stand to-day as the largest manufacturing concern of their class in the world.

Mr. Grosjean, who on the death of his partner became head and principal stockholder of the company, is still actively engaged in the business as president. He can look with natural pride upon the vast industry which he originated and has built up from the smallest kind of an enterprise to its present dimensions. President Grosjean is a notable example of the boundless possibilities which lie before every self-helpful and intelligent young man in this country. Starting in life as a poor boy, with absolutely no advantages to speak of, he has managed by enterprise and perseverance to place himself among the foremost and most honored captains of industry in the United States.

The Woodhaven Factory.

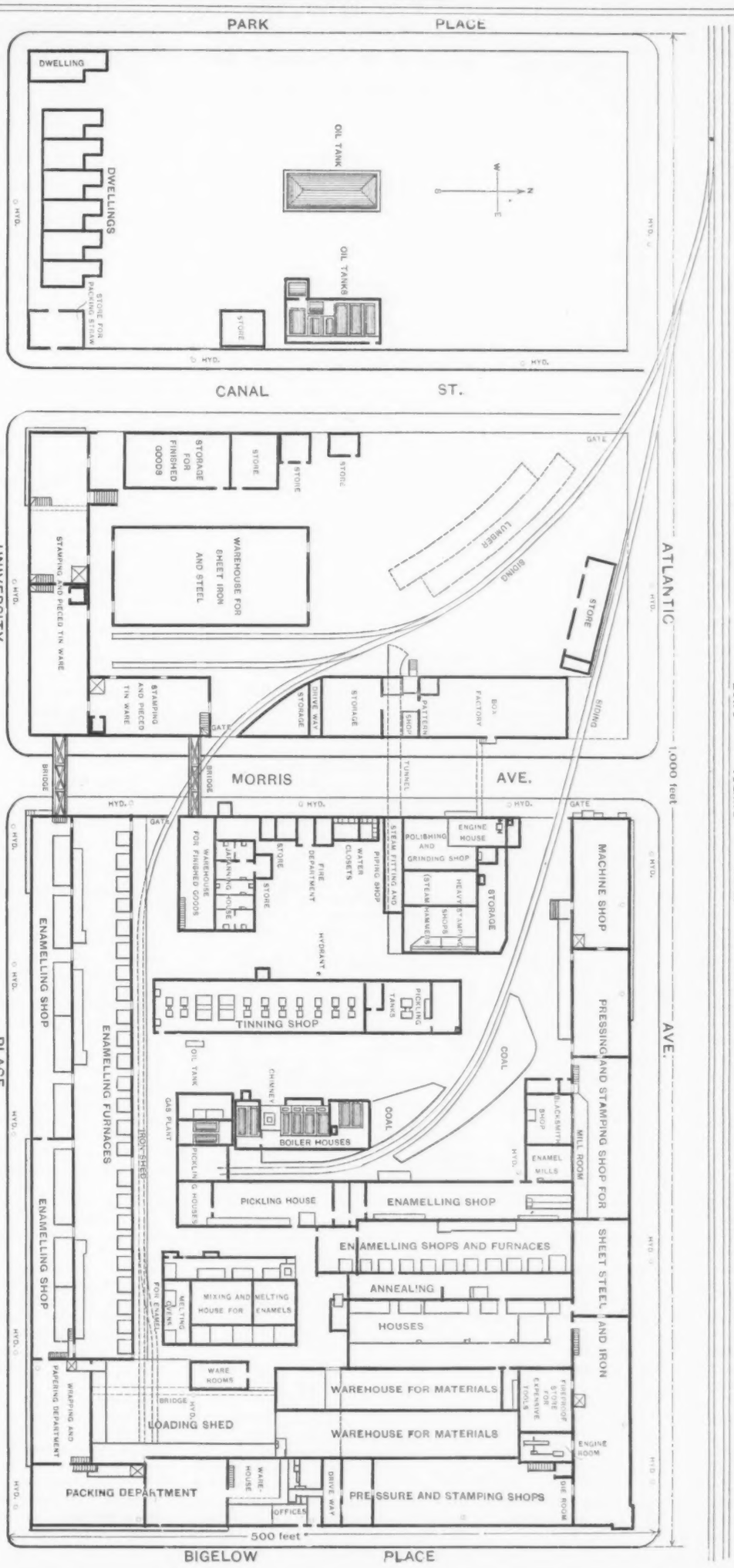
A brief sketch of the Woodhaven factory of the Lalance & Grosjean Mfg. Company and some facts in relation to the manufactures there carried on are appended. Considering the immensely increased use of enameled ironware for household purposes everywhere, it will be readily understood how large a business is done by the company in this line of goods alone, not to speak of the extensive list of household utensils in bright and japanned tinware, in plain iron and steel and other material, which are also produced at the factory. It is said to run into millions of dollars annually. Consequently the visitor to Woodhaven will expect to find a very large establishment. And he will not be disappointed. The great pile of red brick buildings, with high clock tower and chimney, which constitute the factory, are a very noticeable feature on the line of the Long Island Railroad. Woodhaven Junction, near which they are situated, is less than half an hour's run from the Brooklyn terminus of the road, and is very easy of access. The circumstance of the railway running under the walls of the establishment furnishes it with the best of shipping facilities. The buildings cover three-fourths of the company's ground, or three whole blocks. A fourth square is still available for future extensions, being at present occupied by workmen's dwellings and some large oil tanks, which will be presently referred to.

By a reference to the ground plan presented with this article the disposition of the buildings, yards, &c., will be plainly seen. The whole plant covers some 16 acres, and is upward of ½ mile in circumference. The main block, situated to the east, which is almost wholly covered by buildings, measures 500 feet square. On three sides, as will be noticed on the plan, it is surrounded by an unbroken line of shops and warehouses. These run to three and four stories in hight, some parts having a basement in addition.

Stamping Department.

The whole ground floor of the outer buildings fronting the north, parallel to the line of railroad, as well as of those on the east side to the middle of the block, is occupied by machinery for pressing and stamping sheet steel and iron goods, except at the northwest corner, where is situated the machine shop. The presses used for the purpose, some of which are the most powerful tools of their class ever made, were mostly designed and manufactured on the spot. Thirty-five machinists and a corps of draftsmen are constantly employed on this work, which is a very important item in the economy of the establishment. The stock of tools of various kinds in hand is valued, we are told, at over $750,000. A special fire proof storehouse is provided for the more expensive ones.

In the stamping shops rows of presses and stamping machines are lined on each side. Here the sheet iron and steel are cut out and stamped into culinary vessels and the various articles of household use manufactured in the factory. The majority of these are passed on to the enameling shops to be turned into agate or other enameled ware. The largest presses used are capable of forming articles up to 3 feet in depth and 4 feet in diameter, exerting the enormous pressure of 4000 tons. These machines are said to do the largest work in seamless stamping that can be accomplished by any concern in the world. The metal sheets used for this purpose are anywhere from No. 7 to No. 27 gauge, according to the use to be made of the objects and the strength required. Bathtubs, for example, which are probably the largest articles stamped out of one sheet, are often formed of comparatively thin metal, and, provided the subsequent annealing is carefully done, are said to be perfectly strong



PLAN OF WORKS OF THE LALANCE & GROSJEAN MANUFACTURING COMPANY, WOODHAVEN, L. I.

and efficient, notwithstanding their tenuity. Strong kettles for special uses and other large articles require, of course, the heavier gauges of sheet metal. Boiler heads take the thickest metal used in the factory.

Spinning lathes are placed in the second story of the north front, the third floor being used for tin work A great part of the soldering work of the establishment is carried out on this floor, the soldering stoves being heated by gas.

Immediately above the stamping shops on the northeast face are the power presses for the smaller goods. As an instance of the volume of work compassed by one of these tools, it may be mentioned that a single stamping press seen here was turning out cheap teaspoons at the rate of 21,000 daily, the spoons flying out from the press almost faster than the eye could follow them. The attendance of one boy was all that was required for handling the articles and operating the machine. After witnessing this operation, one could more readily understand how it is possible to put such goods on the market at the seemingly ridiculous price of 60 cents a gross. The third floor of this portion of the establishment is occupied by japanning ovens devoted exclusively to the preparation of the larger sizes of tea trays, of which great quantities and varieties are turned out.

Enameling Department.

The extensive line of enameled goods manufactured by the Lalance & Grosjean Mfg. Company forms, however, the main feature of their business; and the space allotted to this department is naturally large. The whole of the southern portion of the main block is occupied by shops where only agate ware is treated. This well-known ware is made of sheet iron, which is found to take the enamel coating better than steel. The process of coating is not a complicated one, and may be briefly described as follows: The enamel preparation, which is a kind of glass mixture, the actual component parts being of course, more or less of a secret, is mixed and melted in large vats and ovens placed in the center of the block. When ready for use, the composition is transferred to a series of baths located in the south wing, where a number of women and boys are employed in dipping the article to be enameled. It should be mentioned that each article requiring coating is previously pickled and then scrubbed and thoroughly cleansed in order to remove all impurities which would prevent the enamel adhering to the metal. The article, after receiving its first coat of enamel preparation, is transferred to one of a long range of ovens placed parallel to the dipping troughs. Here it is fired for about seven minutes; after cooling it is redipped, and again fired —the process being repeated until the object receives its last coating. This is of a different kind and imparts the necessary gloss and hardness to the enamel coating. The quality of the ware depends entirely upon the number of coats it thus receives.

The enamel used for the last coat on agate ware is said to be the only preparation of its nature yet discovered which is capable of withstanding the action of acids. Sulphuric acid has absolutely no effect upon its surface. For this reason the firm have developed quite a large business in special pans and vessels for chemists' use. They are cheaper, stronger, and more lasting than those formerly used for this purpose. Agate ware pans, too, are now largely used by photographers for their work, being more economical and effective than the more expensive receptacles heretofore made use of, besides being easily kept clean. In fact, we are told that agate ware is constantly finding fresh uses.

Besides this specialty, other ware in blue, white, pearl and mottled enamel is turned out in large quantities. Shops for operating these lines of goods are situated in another part of the block at right angles to the north front, and adjoining the annealing furnaces. More dipping troughs and ovens are placed in them, the process of enameling being essentially similar to that above described.

Oil Fuel.

Fifty-four furnaces are in use for firing enameled goods, besides which 20 large annealing furnaces, standing in juxtaposition to the stamping and pressing shops, are kept in full blast for treating the stamped iron vessels. These, and all furnaces on the works, are heated by oil fuel, which has been found to give here the best and most economical results. Crude oil, the material used, is consumed to the amount of about 9000 gallons daily. The oil is kept in large storage tanks, marked on the plan in the as yet unbuilt on square to the west. These tanks have an aggregate capacity of 160,000 gallons. The oil is conveyed into them by natural flow through pipes connected with stand pipes adjoining the railroad track, the material being delivered direct from the tank cars. From these reservoirs the oil is pumped to the various portions of the works as required. The system of firing used is that of the Aërated Fuel Company of Springfield, Mass., who erected the oil plant. The saving of time and labor and the gain in cleanliness involved in the adoption of oil fuel is said to be immense. The dirt and ashes attending the use of coal are entirely avoided, and the fires can be instantly lighted or extinguished. The second floor of the south wing is used for the manufacture of wash boilers in tin and copper, of which a very extensive line is made. The wash-boiler shop is one of the finest of its kind, being more than 300 feet in length. All the various processes of piecing and finishing the utensils are carried on here —soldering, riveting, &c. This shop is connected, by means of a bridge over the intervening street, with the second floor of the new tinware department in the center block.

Tinning Shop and Boiler House.

A large proportion of the tinware made at the factory is retinned after manufacture, particularly that which has been at all heavily stamped. For this purpose a large tinhouse is provided. It is located almost in the center of the eastern block, as will be seen by reference to the plan. The tinhouse contains 40 pots, holding in the aggregate about 150,000 pounds of melted tin. These pots are kept constantly at melting heat, year in and year out, the material being never permitted to solidify.

Parallel to the tinning shop are the boiler houses, containing a battery of eight tubular boilers of 100 horse-power each, made by Smith Brothers of Brooklyn. Next to the boiler house, and between it and the gas plant, rises a brick chimney 157½ feet high, which serves to carry off all the smoke and vapors of the factory. Every fire in the entire establishment is connected with this central chimney by means of a spider-web-like ramification of underground flues leading from all parts of the establishment. Power is supplied by two horizontal engines. One Corliss engine of 500 horse-power is placed near the northeast corner of the main block, and one of 250 horse-power, made by the Fitchburg Machine Company of Fitchburg, Mass., is located near the northwestern corner. The latter supplies the power for the new buildings on the second block.

Adjoining the second engine house is the polishing and grinding shop, containing a large number of emery and corundum wheels. Next to this department are the shops containing the steam hammers, mounted on a foundation 35 feet deep. These hammers are very powerful and are capable of striking a blow of 2 tons.

In addition to the departments we have briefly mentioned, a large number of others are housed in the numerous buildings which cover the main block. Exigencies of space, however, forbid further enlargement in this direction. One can only name the japanning houses, the blacksmith's shop, the departments for making ears, bails and handles of vessels, the mills for grinding enamel, and other places where are conducted the hundred and one minor processes incidental to a great factory. Specially designed machinery is employed for the carrying out of almost every detail connected with the various manufactures, a great part of which really deserve a detailed description, which it is impossible to afford at present.

Reference should not be omitted to the great castellated clock tower standing at the northeast angle of the square, which is a very prominent feature of the works.

The Tinware Factory.

Passing from the northern quadrangle, which is nearly covered by houses, we come to the second square on the western side, where is situated the newest portion of the factory buildings. This part of the works is connected with the main buildings by means of two bridges on the second floor, and a subterranean tunnel. The L-shaped building, 300 x 40 feet, which stands in this portion, was erected only last year. It is four stories in hight, brick built, and in general features similar to the outer buildings of the northern square. Here is conducted the bulk of the tin and japanned ware manufacture. Some of this class of goods are, as will have been noticed, still made in the older portion of the works, but it is intended to eventually transfer the whole of the tin work to this side, leaving the main buildings exclusively for the operations connected with enameled goods, the growing demand for which calls for largely increased space. All kinds of domestic tinware, stamped and pieced, plain and decorated, are turned out in the numerous shops of the building. Machines of special design for seaming, wiring, bending, flanging and otherwise operating the various articles of tinware manufactured enable the sundry operations to be carried out with the greatest quickness and economy of labor. Indeed, the actual hand labor put into the work all over the factory appears to be reduced to the finest minimum. Machinery accomplishes almost all the mechanical operations in which the intervention of the human hand was formerly considered essential, and does it with far more accuracy and celerity. A great deal of the soldering here is done by women and girls.

Some very handsome decorating is conducted in a portion of the new building, on such articles as may be appropriately embellished—namely, tea and coffee pots, tea trays, water coolers and other enameled or japanned goods. A department of considerable size is tenanted by the company's designers and decorators. The outline designs are usually laid upon the object to be decorated, the color being subsequently applied by hand. Some of the japanned articles, as tea and crumb trays, coolers, &c., are decorated with ornamentation in gold and colors, which is placed on the article from transfer paper, on which the patterns have been stamped by means of chromo-lithography. The lithography is also carried out on the spot.

Warehouses and Stores.

Adjoining the tinware factory is a large building containing the raw material in sheet iron and steel. About 50 tons of this material are used weekly. The whole of the supply is furnished by the company's new rolling mills at Harrisburg, Pa., which were first put into operation about three months ago, and of which a detailed description was published in a recent issue. The amount of tin plate used in the manufacture of tinware reaches a weekly average of nearly 1000 boxes. It is likely that a department for the manufacture of tin plates will before long be added to the firm's Harrisburg mill, in order that they may supply themselves with this important item. This course has already been taken with great success by a large stamping company of St. Louis.

Several other stores for material, and also for finished goods, are located on the second block. The principal warehouses are, however, placed in the southeast angle of the main block. The ground floor of this section is used for office purposes and for wrapping, papering and packing goods. These goods are then either stored in the large warehouses on the floors above, or are, when boxed and required for shipment, transferred to the adjacent loading shed. A very large stock of goods is carried by the firm not only here, but also in their New York, Boston and Chicago stores.

The facilities for shipment are excellent, and can be readily seen on the accompanying plan. The sidings from the line of the Long Island Railroad traverse the works in a number of directions. Several tracks are arranged for delivering the raw material alongside the various stores. The line which communicates with loading shed divides into a double track, and is so arranged that the cars for the East are always loaded at one side of the shed, and those for the West on the other side. About four carloads of goods are sent away on an average daily, besides some 500 cases for the New York trade, which are dispatched separately.

For the packing of these goods about 2,000,000 feet of lumber is cut up yearly, the packing cases—for which no charge is made—costing the company in material and labor some $50,000 annually. The lumber store and box factory are located on the middle block, as shown in the plan.

Precautions Against Fire.

It is stated that the insurance companies regard the Lalance & Grosjean factory as one of the very best risks they have, owing to the excellent fire arrangements provided. There is a regular fire brigade composed of 50 employees, who are said to be a most efficient corps. Every precaution has been taken in the buildings to make them as nearly fire proof as possible. The roofs are all of metal with galvanized iron cornices. All the wood work of the interior is lined with metal, and sliding iron doors divide the various shops. A supply of buckets, with vertical pipes and hose, are placed in each building, while 25 hydrants are located inside and outside the yards. These are all connected with two reservoirs of 4,000,000 gallons capacity, situated on an elevation at about three quarters of a mile from the factory. The pumping capacity is about 1,000,000 gallons daily, the water being obtained from artesian wells. These reservoirs constitute also the chief water supply of the town of Woodhaven. Every precaution has been taken to avoid the risk of a similar disaster to that of 1876, and, so far as human foresight can go, the preventive measures adopted almost entirely preclude any recurrence of such an unfortunate event. The buildings are heated partly by steam and partly by stoves.

Organization and General Arrangements.

A feature of this great industrial establishment which is well deserving of lengthened description, but to which we can afford but a passing reference, is the efficient system of organization which pervades the entire factory. Although some 1700 hands—men, women, boys and girls—are employed, all seem to know exactly what their work is and appear to do it thoroughly. There is no crowding and no hurry. There are, it appears, about 40 different departments, each one of which is in charge of a foreman, to whom is relegated the entire control of the workers in that department, and who is directly responsible to the general superintendent, E. W. Ball, for the work of his branch. Several of these departments are again sub-divided into sections controlled by leading men who are responsible to the foreman in charge. The system, which is of the nature of that in a large regiment, is stated to operate with clock-work regularity; but it must have required a vast amount of organizing skill to bring it to perfection. The space allotted to each worker is very generous, and one of the most striking points in the whole establishment is the amount of elbow room possessed by all. The arrangements for supply of light and air are excellent, and the general health of the workers is consequently said to be exceptionally good.

The firm exercise a wise liberality toward their employees, and in many ways evince a concern for their well-being and comfort which is apparently fully appreciated on their part. Strikes are unknown, and we are told that some hundreds of the men now working for the firm have been continually in their employ for the last 10 to 25 years. Most of them have grown up in the concern and take the greatest personal pride in its success and progress. The surroundings of the factory are very attractive. A park has been laid out immediately adjoining it, where green sward, flowers and trees, and benches for rest, are provided for the pleasure and refreshment of the workers and their families. From all reports there is a remarkable contact or personal interest and sympathy between employers and employed, which fully accounts for much of the success of the concern, and which can but make for good and cheerful work on the part of their employees.

The presidency of the Lalance & Grosjean Mfg. Company is held, as we have mentioned, by the venerable founder, Florian Grosjean. Mr. Grosjean is ably assisted by the vice president, Augustus J. Cordier, to whose energy and judgment much of the later success of the concern is due. E. W. Martin is secretary and treasurer, and E. W. Ball has charge of the factory.

Besides the immense domestic business done by the company, they have a very large foreign connection. Their principal markets abroad are found in Canada, Australia and Brazil, although they are doing a good trade in South Africa, China, Japan, India and other quarters. This foreign business is yearly increasing. The main office of the Lalance & Grosjean Mfg. Company is at 19 Cliff street, New York City.

Canadian Mineral Production.

The Geological Survey Department of Canada has prepared statistics of the mineral productions of the Dominion for each year from 1886 to 1892, which, although showing on the whole a steady increase during the whole period, record a falling off in the case of most minerals last year. The production of copper shows an increase from $354,000 in 1886 to $1,160,740 in 1891, but it fell to $925,589 in 1892. Gold started with $1,330,482 in 1886 and the output has declined year by year, until in 1892 it amounted to $900,483. The silver production in 1886 was $209,090, and steadily increased till 1890, when it was $402,662, then declined to $264,510 in 1892. Iron ore to the value of $126,982 was produced in 1886, and has slowly increased with some fluctuations to $142,005 in 1891; in 1892 it went up to $254,206. Nickel statistics are given only for the last three years. The figures are $933,282, $2,775,976 and $3,513,339, a very gratifying increase. The coal production shows an increase. In 1886 the value of the output was $5,017,225; in 1891 it had gone up to $8,144,247, but it fell last year to $7,181,610. In mica the output in 1886 was $29,008 and it has steadily increased to $100,923 in 1892. The phosphate production, on the contrary, is decreasing. In 1886 it was $804,638 worth; in 1891 $241,603; in 1892 $157,424. The total output of metallic ores in 1886 was $2,021,549; in 1890, $3,570,685; in 1891, $5,551,195; in 1892, $5,807,049.

The non metallic ore production was $8,096,719 in 1886, $14,359,174 in 1891, and $13,334,267 in 1892, the largest increase being in coal.

The Grand Jury made a very strong presentment in the case of H. B. Hollins & Co., who prosecuted for libel when reports attacking their solvency were circulated. No indictments were found on account of the conflicting character of the evidence, but the presentment says the incident should be made the occasion of more stringent legislation against the originators and repeaters of unwarranted rumors. Gossip mongers are especially denounced, and the "conspirators," who are said, "in this instance, to have had the services of the gossips," are vigorously condemned, although they escape being either named or indicted.

The population of Denver and suburbs, as shown by the new directory, is 150,000, a gain of 10,000 during the last year.

The Indiana Gas Belt.

BY C. R. BOYD.

The practical application of natural gas as a fuel, in the reduction of nearly all metals, has been so fully demonstrated in Pennsylvania and elsewhere in the last two decades that it has become a recognized power in the literature of metallurgy. Even in those localities where natural gas has become less abundant than formerly by its too prodigal use or culpable waste, the return from gas to the use of other forms of fuel must be accompanied with many pangs of regret; though other forms of fuel may be also both cheap and reliable. Consider the inexpensive and absolutely cleanly application of natural gas in comparison with fuels which must be handled several times in their application, and then, after combustion, a very large percentage of the whole, as residues, be removed, involving additional expenditure and annoyance. Add to this the lading of the air and the coating of every neighboring surface with soot and dust, often difficult if not impossible to remove.

W. J. McGee of the United States Geological Survey, now one of the recognized authorities in these special lines, says, in his admirable introduction of Dr. Phinney's memoir on Indiana natural gas, as follows :

"The use of rock gas has forced upon practical fuel consumers a conviction long held by students, *i. e.*, that the gaseous is the most convenient and economical of fuel as well as illuminant. Even if the natural supply of rock gas were exhausted to-morrow, manufacturers of glass, certain grades of iron and other products would substitute an artificial gas for the natural product rather than return to coal."

For several weeks the writer has endeavored, by most careful investigation, to read some of the important lessons taught in this extensive gas field of Indiana, having in view, mainly, all the points of practical utility involved in the question of the employment of natural gas as a fuel.

The State Geologist of Indiana, S. S. Gorby, says the whole gas field is about 5000 square miles, much of which is low pressure or light in yield, and the rest of it, more centrally placed, about 1600 square miles, is high pressure, or abundant in yield. As for all purposes of metallurgy on a large scale the heavier yield of gas would be required, let us consider the application of gas as a fuel in the area of high pressure. This area, in Indiana, is divided into three parts. The largest connected body (or nine-tenths of the whole) is in the counties of Grant, Madison, Delaware, Jay, Blackford, Howard, Tipton and Hamilton. Another part, about 17 miles long by 7 in width, is in the western part of Tipton and Hamilton counties, and a third piece, 8 miles in diameter, is in Hancock County. The geographical center of the largest area is 3¾ miles northeast of Alexandria in Madison County, at an elevation above the sea of about 970 feet. Adding to the largest body the weight of the other two smaller areas described, the center of gravity is brought within the corporate limits of Alexandria, lying at the junction of the Lake Erie & Western with the Big Four Railway.

The truth of these statements may be easily verified by reference to the admirable reports and maps of the State Geologist, which are ably reinforced by the memoir of Dr. Arthur John Phinney, issued as an extract from the Eleventh Annual Report of the Director of the United States Geological Survey.

This place is also found by this inspection to be centrally located with reference to the flattened dome or crown of the broad anticlinal which passes from the direction of Cincinnati, northwesterly, through the counties named. The distance from the surface down to the Trenton limestone—the reservoir of the gas—being an average of 925 feet about here, the initial or static pressure of the gas is about 325 to 360 feet per square inch.

In all wells of 3 inches diamater which happen to be drilled the same depth into this Trenton rock, possessing uniform porosity as this does, the flow per day is about 8,000,000 cubic feet.

This estimate of the flow has been carefully made by the method given in Professor Orton's very able report now forming a part of the literature of the United States Geological Survey. One well, the volume of which was estimated for flow through a casing of 5⅝ inches, has a discharge of 12,435,000 cubic feet in 24 hours.

Several wells in this locality are down 50 feet into the Trenton limestone, without adding any moisture whatever to the gas; and, for this reason, it is assumed that the supply of gas here will be longer-lived than the average.

The preservation of the gas supply against wanton destruction is now carefully guarded by law; and there is also a stringent provision against wells becoming more numerous than one to every 40 acres. So great is the desire of owners of all the gas territory, within the central area of the belt, to preserve the supply for use of manufacturers and for domestic purposes, that no pipe lines to cities or distant places are permitted to come into it, it matters not what inducements may be held out. So that there is an area of fully 400 square miles around here, into which no such pipe lines are now located.

It may be perfectly reasonable, therefore, that such extensive establishments as the De Pauw Plate Glass Works are established here. The expense incurred by that company in obtaining their fuel, after purchasing, or having donated to them their building ground, was simply the $1000 or $1100 apiece paid for sinking their wells.

As to steel manufacture, Mr. Beatty, president of the Midland Steel Company of Muncie, says he is now making 25 tons of billets per day out of pig, scrap and Iron Mountain red iron ore, in the open-hearth furnace. In looking over the whole plant I observed that all the heating was done with gas under a pressure reduced to about 2½ to 8 ounces per square inch, the final product being sheet steel. The Midland Steel Company employed about one-half the daily yield of six wells, whose aggregate yield, when all the gas is on, is about 12,000 000 cubic feet per day.

The Indiana Iron Company, at Muncie, are making daily 125 tons of rolled iron, square and round, using three fifths of the possible yield of nine wells, whose total yield would be about 25,000,000 feet per day. The gas is delivered and radiated from a bin pipe. Much care is exercised at Muncie to see that no wel is used to its full pressure, for fear of the intrusion of salt water, which, everywhere underlying the gas, is probably nearer to the surface of the Trenton rock at that place, so near to the southeast margin of the high-pressure gas field. Near the center the average to each well is now about 8,000,000 cubic feet each, while the averages just given are little over 2,000,000 feet per well.

Anderson and other places in the gas belt have enterprising steel and iron rolling mills and foundries, and, probably because of the important element, possible longer life of the gas here, Alexandria is preparing to erect the most extensive steel plant in this part of Indiana. The best and most reliable series of analyses of this gas is doubtless that of Prof. C. C. Howard of Starling Medical College, Columbus, Ohio.

Marsh gas	92.61
Olefiant gas	0.30
Hydrogen	2.18
Nitrogen	3.65
Oxygen	0.34
Carbonic acid	0.26
Carbonic oxide	0.50
Sulphureted hydrogen	0.20

Although the State authorities here and others are discountenancing the

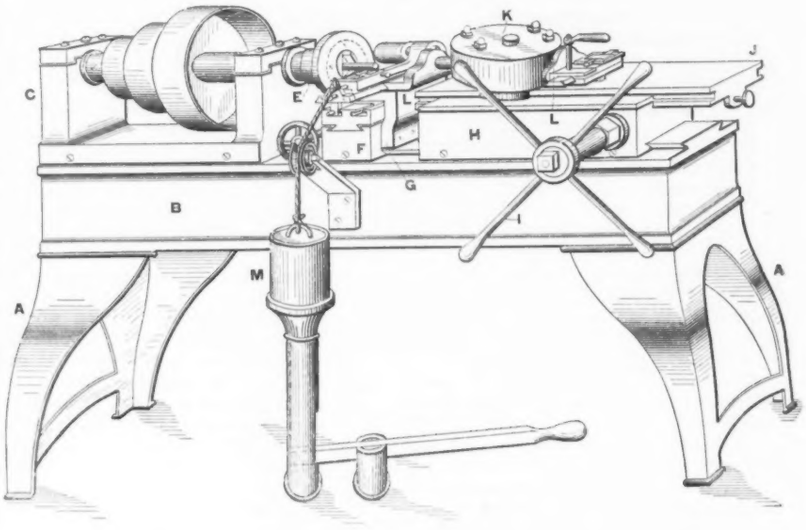


Fig. 1.—*Perspective.*

THE DRYSDALE TURRET LATHE.

use of natural gas in steel and iron works, trying to restrict its use to glass manufacture, other simpler manufactures and domestic uses, it is evident that the ratio of increase in the establishment of iron and steel works in the gas belt is probably much greater at this time than it is in any other part of the country. Various other combinations are rapidly taking hold of this entire field, and the number of manufacturing enterprises being added daily and almost hourly to the sum total is astonishing.

The Drysdale Turret Lathe.

The turret lathe of which drawings are here presented was designed by Hugh Drysdale of 2 Edgewood place, Cleveland, Ohio, and has been in successful operation in the Standard Sewing Machine works of the same place for several months. The object sought by the inventor was to provide certain attachments to the spindle and frame of a turret lathe by means of which cams, elliptical, polygonal, heart-shaped and other analogous forms of irregular shape could be readily turned. Fig. 1 shows the machine in perspective; Fig. 2 is a plan view of the parts comprising this particular construction; Fig 3 is a longitudinal perspective view of the vise-jawed chuck; Figs. 4, 5 and 6 are plan views of the former or pattern; Fig. 7 is a perspective view of the tool body, and Figs. 8 and 9 are detailed views of the slide carriage and tool block detached.

In the head stock C revolves the spindle carrying the vise-jawed chuck E, the face and jaws of which are shouldered as at y, Fig. 3, and is supplied with a correspondingly recessed disk secured by screws through the disk into the screw holes n^3 in the body of the chuck in such a way as not to interfere with the opening and closing of the jaws v by the operation of the screw z. The disk is revolved with the spindle and has cut in its circumference a form or face, b^2—that is, a pattern of a cam, elliptical, Fig. 4, polygonal, Fig. heart-shaped, Fig. 6, or other analogous forms of irregular shape. Each distinct pattern is cut upon a separate disk adapted to the shouldered chuck and is used individually and serves as a pattern of the work to be turned. It also serves as an actuating cam that makes contact connection of the face b^2 with an anti friction roller, e', engaging the slide carriage d. On the tool body L, in the turret K, is provided a slide carriage, d, transversely mounted in dovetailed slide ways, o^3, Fig. 7, and has arranged on its top a fixed dovetailed guide way, h, Figs. 2, 8 and 9, which serves to guide a correspondingly recessed base plate of the tool block f. On the inner side of the slide carriage is an upright extension, s', having fixed in its top a pin, f', that engages the cable i carrying the weight M, as shown in Figs. 1 and 2. To the side of the tool body L, Fig. 7, is permanently secured the rod i^3, that extends through a hole in the downward extension s^2 of the slide carriage, and is encircled by a spiral spring, i^2, between the downward extension and side of the tool body L. On the opposite end of the slide carriage is an upright extension, x, having a laterally projecting stud, e^2, which is secured by a shoulder extension, e^3, and draw nut, p, in the extension x, and which carries the anti-friction roller e' that forms the contact connection of the slide carriage with the pattern b^2 described above. Revolving the pattern moves the slide carriage d transversely through a space on the tool body L equal to the cam development given to the pattern face b^2. The slide carriage is drawn in the opposite direction by the weight M and the spiral spring i^2.

Thus is the slide carriage transversely reciprocated on the tool body L, which is moved lengthwise of the machine on the rest G, in conjunction with the transverse reciprocation by the hand wheel I, which governs the extent in length of the forms of irregular shape to be turned.

The tool block f is shown in perspective view in Fig. 9, and has a transversely arranged groove, o^2, in its top, a knife, n^2, in the groove, with a screw, o, in the block to adjust forward the knife in the groove as it is worn or ground away. The knife has a cutting edge on its projecting end, with which to turn the cam, of an elliptical, polygonal or heart shape, or other faces of irregular shape, corresponding to the pattern face b^2. A similar groove, knife and adjusting screw are longitudinally arranged on the tool block f, the knife having a cutting edge on its projecting end with which to turn cam hollows, collars, &c., similar in shape to the pattern face b^2. The knives to be used individually are secured in their respective groove o^2 by means of a cap piece, n^4, and set screw, n^3. The tool block f has a slot, f^3, vertically through its body, a cap piece, f^2, extending over the sides of the slot, a screw, f^4, projecting through the cap and slot into a correspondingly threaded hole in the slide way h, which firmly retains the tool block f to the slide carriage d when in use. The tool block is moved to or from the bar metal on the slide way by releasing the screw f^4 and operating the screw n' that is threaded through the upright extension s' and engages the tool block on the slide way h to the extent of the slot f^3 when not in use. The tool block is made movable on the slide way, as described, so that forms or hollows in shape similar to the pattern face b^2 can be turned of various diameters by the same or different pattern face, b^2, by moving the block to or from the bar metal. The weight M when disconnected from the slide carriage d rests upon a stand, Fig. 1, that is provided with a downward extension projecting into the hollow of an upright piece, and rests upon the end of a foot lever that is fulcrumed in the upright piece, and the stand is raised or lowered by the foot lever as it is desired by the operator to couple or uncouple the weight by its engaged cable to or from the pin f' on the slide carriage d.

The operation of the machine is as follows: The tool body L is moved forward on the rest G by the hand wheel I, which brings the anti-friction roller e' of the slide carriage in contact with the pattern face b^2 of the disk in use; that is revolved by the spindle, and reciprocates in one direction the tool

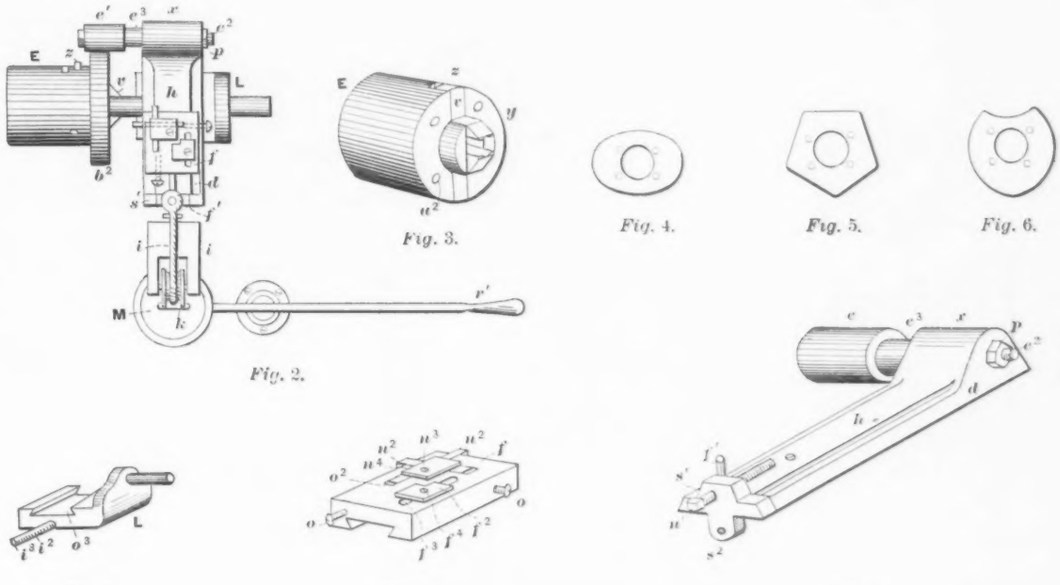


Fig. 2. Fig. 3. Fig. 4. Fig. 5. Fig. 6.

Fig. 7. Fig. 9. Fig. 8.

DETAILS OF DRYSDALE TURRET LATHE.

body L, the slide carriage *d* and its tool blocks *f*, being drawn back in the opposite direction by the tension of the spiral spring s^2, or suspended weight M and connections, the knife n^2, in use meanwhile, imparting to the bar metal that is held in the chuck E a face or hollow that is an exact counterpart of the pattern face b^2 in use. The knife is fed lengthwise of the bar metal the required length by the hand wheel I, the roller e' gliding on the pattern face b^2. The form or hollow being turned thus, the weight stand is raised up by the foot on the lever, and lifts the weight up so that the cable can be disconnected from the pin f' on the slide carriage *d*, which is drawn back and turned about the turret K by the wheel I, so that each form or hollow produced may be operated upon by any other desired tools in the turret before cutting the same from the bar metal, which is done by a suitably arranged knife.

The Dow Compound Steam Turbine.

In former issues we have described the steam turbine invented by J. H. Dow of Cleveland, Ohio, and mentioned particularly its adaptability for the driving of high speed apparatus, such as dynamos, and its use in connection with the Howell torpedo. That engine had one pair of bucket wheels mounted upon a shaft, which co-operated with opposing pairs of stationary disks. Those wheels had, respectively, series of buckets arranged in concentric order, and which traveled in annular paths between corresponding series of guide plates or shutes projecting from the faces of stationary disks toward the opposing wheels. The steam was introduced to these wheels at the inner edges of the disks, and passed from thence radially outward across the face of the wheels and discharged at the periphery into the exhaust chambers. This construction was not adapted to develop the highest efficiency from the very high pressure of steam used, because the number of compoundings upon a single disk and wheel of moderate diameter would necessarily be few, and a disk and wheel of large size would have the disadvantage of excessive leakage across the face of the bucket and too great a difference of circumferential speed as between the inner and outer series of buckets, and would increase the weight of the engine beyond the proportionate increase of effectiveness.

In order to overcome these defects, Mr. Dow designed an engine—for which letters patent were issued recently—in which he employed two or more pairs of wheels and opposing disks, the different wheels being mounted on a common shaft and the different disks being held rigidly by their connection with the casing. The steam is first introduced into an initial pressure chamber, located midway between the central disks, and from thence it flows right and left to the inner pair of wheels, entering the wheels at the inner edges of the disks and passing radially outward between a disk and wheel and discharging at the periphery into exhaust chambers, which serve also as pressure chambers for the next wheels, and so on throughout the series of wheels. Enough of these wheels, arranged in pairs, are provided to substantially utilize the expansive energy of the steam.

In the lay out of vents, the stationary guide plates or shutes are curved to conform as nearly as convenient to the ordinary form used in the water turbine. The buckets also approximate the buckets of the water turbine except that they are V shaped rather than U-shaped, the former being the stronger and hence better adapted to withstand the great centrifugal force which the extreme speed of this motor generates.

The relative area of vent passages through guide plates and brackets is so proportioned that the highest velocity of flow will be through the inner legs of the buckets or V's, to the end that the full kinetic energy of the elastic agent may expend itself in a forward impelling flow against the apexes of the buckets.

A' A' are the next outer sections of the shell, each section A' having an internal flange, *a'*, these flanges being provided on their outer faces with shutes or guide plates *c*, vents *c'* and annular paths between the different series of guide plates, the same as on the inner disks C C. A^2 A^2 are similar shell sections, each having internal flanges a^2 a^2 provided with guide plates as just described. The guide plates of the different disks and internal flanges all present outward. The different sections of the shell are nicely fitted the one to the other, and these, together with the heads B B, are fastened by bolting through and through, as shown. The hubs B' of

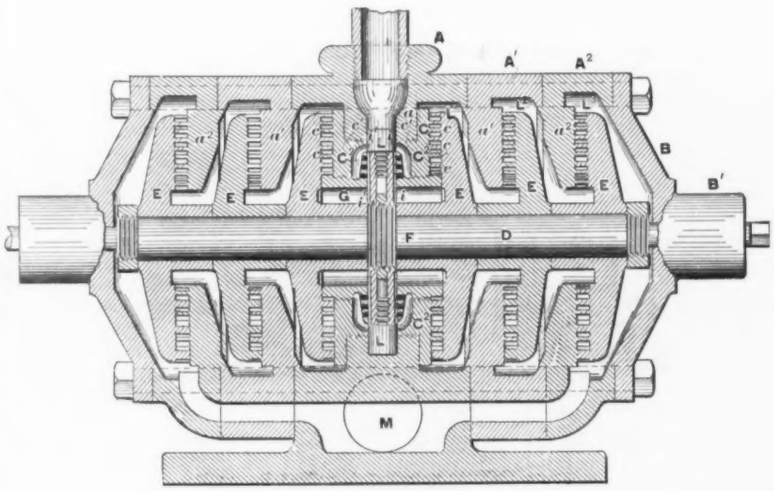


Fig. 1.—*Section Parallel with Shaft.*

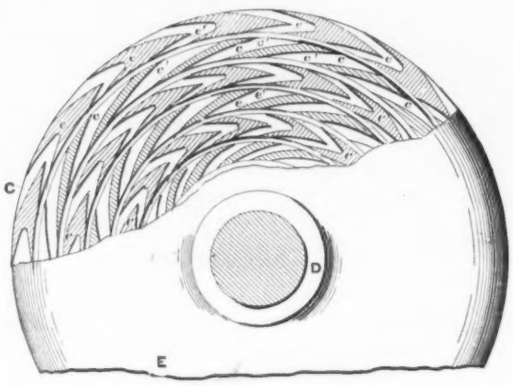


Fig. 2.—*Cross Sectional Elevation.*

THE DOW COMPOUND STEAM TURBINE.

The central section A of the shell or body of the engine has a supporting base or flange, as shown, and has an internal flange *a* for attaching disks C C, the internal edges of this flange being screw threaded and the hubs of these disks being externally screw threaded for engaging the screw threads of the flange. The inner faces of the hubs of these disks are separated to form an annular pressure chamber, L, the latter being in open relation with the induction steam pipe, as shown. The disks C C on their outer faces are provided each with two or more concentric series of curved guide plates or shutes, *c*, Figs 1 and 2, curved substantially like the corresponding members of a water turbine, the opposing ends of the next adjacent shutes overlapping, but being separated slightly to form the vents *c'*. the heads B are constructed to form suitable journal bearings for the shaft D.

On this shaft is mounted a series of wheels, E, arranged in opposing pairs and facing inward or toward the adjacent disks bearing the guide plates. Each wheel E on its inner face is provided with two or more concentric series of buckets, *e*, each series of buckets being made to run in an annular path between the guide plates or radially outside the guide plates. These buckets are of the V-shaped variety. These buckets overlap each other, more or less, the V or point of one bucket extending more or less between the legs of the next adjacent bucket, but are located a little nearer the inner leg of the next bucket, so that the inner portion of a port, *e'*, will be a little smaller than the outer portion of the same port.

The steam from the initial pressure chamber L flows right and left past the inner edges of the disks C C, and from thence passes radially across the faces of the inner pair of wheels E, of course passing through the vents and ports of the guide plates and buckets and exhausting at the peripheries of these wheels into chambers L′ L′, these chambers serving as pressure chambers for the next outer pair of wheels E, and so on throughout the series. The outer chambers L^3 connect with the exhaust pipe M. By means of the compounding on each wheel aggregated by the different wheels, the kinetic energy of the steam is supposed to be substantially utilized, so that when it reaches the final exhaust it is substantially at atmospheric pressure.

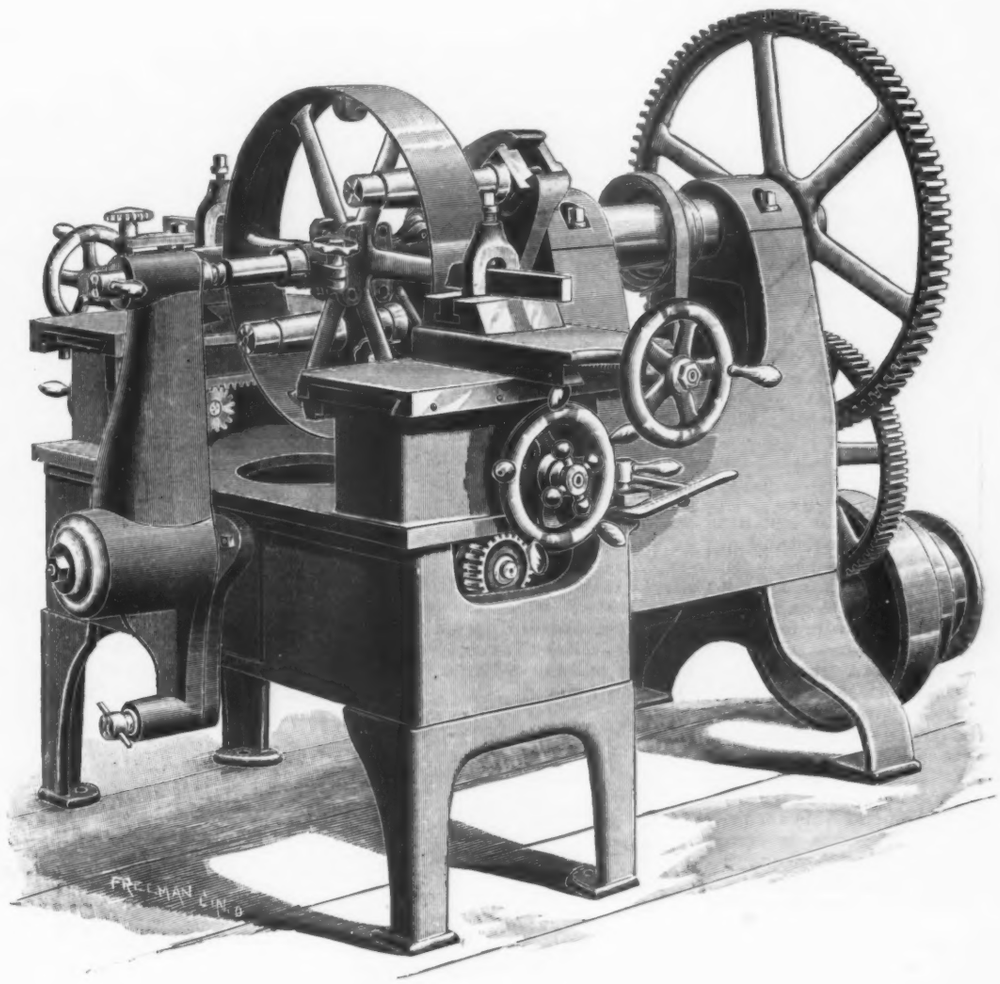
A pressure balance for holding the shaft and wheels endwise is provided at F, the center of the wheel.

The number of compoundings necessary will, of course, be in proportion to the pressure employed, and suppose the number of compoundings required were 12, in which case, if three compoundings were had on each wheel, it would require four pairs of wheels, whereas if four compoundings were had on each wheel but three sets of wheels would be required. These compoundings may be varied indefinitely according to circumstances. The pressure in the outer chambers is supposed to be reduced approximately to atmospheric pressure, and hence no stuffing boxes are required for the engine shaft, and at the high speed of these engines it seems about impossible with any present known material to construct practical stuffing boxes for this purpose, but were it not for such difficulty with the stuffing boxes, the initial pressure might be introduced to the outer chamber and exhaust from the central chamber, and there might be conditions under which such arrangement would be advisable or even preferable. For instance, if the engine were operated inside a reservoir containing compressed air or elastic agent for operating the engine, or suppose it were desired to operate the engine inside a tube through which compressed air was conveyed to a mine or tunnel, such compressed air from the tube being used to drive the engine. In such cases if the compressed air were admitted first to the outer chambers of the engine no stuffing boxes would be required, for the reason that the pressure outside the engine would be greater than the pressure inside the engine. If for any reason such arrangement of the engine as last referred to were desirable, there would be no trouble in so doing; the bucket wheels would be reversed on the shaft so as to present outward and the guide plate disks would have to be reversed so as to present inward, and all this would necessitate the dividing of the pressure regulator and placing it in halves at the eduction of two corresponding chambers on opposite sides of the central chamber.

The Streit Pulley Lathe.

A. Streit of Pearl and Plum streets, Cincinnati, Ohio, has designed a machine for turning pulleys only, which is constructed so as to save all possible time in handling the work and adjusting the machine. The two rails are joined together and form a table which swivels in the center. On one side of the table there is a series of holes drilled so that each will give a different taper. The table is moved by a lever, a taper pin placed in the proper hole, and both rails are set at the same time.

It requires but three or four seconds to set the machine for either straight or crown-faced pulleys. But three mandrels are used in the machine, and they are fitted into the spindle like the center of an engine lathe. The mandrels are straight, and taper bushings which clamp on the mandrel hold the pulley in place.



THE STREIT PULLEY LATHE.

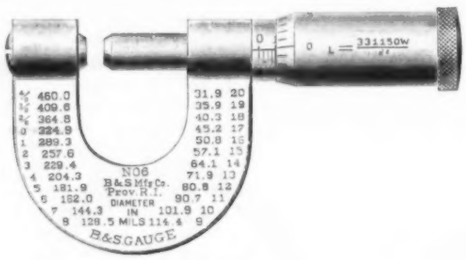
By this method the work may be kept in the center of the mandrel. The tail stock is removable. By removing a pin at the bottom it may be swung to one side when placing work in the machine or removing it. The face-plate is provided with two sets of drivers—one set for pulleys that have an even number of arms and one set for pulleys having five arms.

This lathe swings 26 inches. The spindle is $4\frac{7}{16}$ inches in diameter; the bull gear is 30 inches in diameter. The cones are 18 inches in diameter and

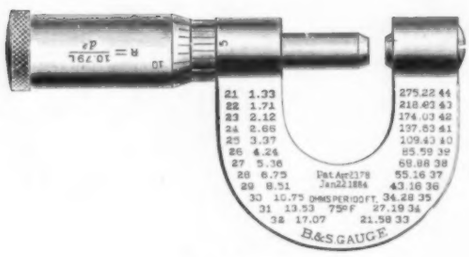
have three speeds. The machine occupies a floor space of 5 x 7 feet and weighs 2500 pounds.

New Brown & Sharpe Micrometer Calipers

The Brown & Sharpe Mfg. Company of Providence, R. I., have introduced two micrometer calipers, here illustrated, intended especially for the use of electricians. The No. 6 caliper is arranged for the users of wire for electrical purposes, and measures all sizes to 0000 B. & S. gauge by tenths of mils. The equivalents, expressed in mils, of the different sizes of wire from 0000 to 20 are stamped on one side of the frame and the circular mils of the same sizes on the other. Three formulas are stamped on the thimble—one for the weight, length in feet and diameter being known; one for length in feet, weight and diameter being known, and one for resistance in ohms per 100 feet at 75° F., length and diameter being known.



No. 6.



No. 7.

NEW BROWN & SHARPE MICROMETER CALIPERS.

The No. 7 caliper differs from the other only in that the equivalents stamped on one side of the frame are for wire from 21 to 44, B. & S. gauge, and the resistance in ohms per 100 feet at 75° F., of the same sizes on the other.

A wrecking company has been organized to raise the steamer Oregon, sunk by collision off Fire Island, the idea being to inflate bags placed in the hold, by means of air pumps; but doubts are expressed whether the property would be of sufficient value after its long immersion to reimburse the expenditure, even if the scheme is practicable.

Advices from Europe report excellent prospects for the present year's silk crop. The yield in China and Japan is also said to be highly satisfactory and of more than average quality, so that American manufacturers are looking out for a revival of their business, which has not been of the best lately.

Segregation in Steel.*

BY F. H. WILLIAMS, WHEELING, W. VA.

A few years ago I came across a broken ingot of soft Bessemer steel which had been fractured squarely across at about 2 feet from the bottom. The whole length of the ingot was about 5 feet. With a diamond-shaped chisel I took five samples from the fractured surface, which showed the following phosphorus contents:

No. 1.—Close to outer surface of ingot and midway between two angles (0.086 phosphorus).

No. 2.—Two inches from outside and in a line from No. 1 to center (0.081 phosphorus).

No. 3.—Three and one-half inches from outside (0.187 phosphorus).

No. 4.—Five inches from outside (0.166 phosphorus).

No. 5 —Seven and one-quarter inches from outside at center of ingot (0.146 phosphorus).

The products rolled from a steel ingot will necessarily show irregular distribution of the elements which segregate. For example, I have found in a piece of nail plate, which is a portion of an ingot greatly reduced in thickness and greatly elongated, 0.092 per cent. and 0.091 per cent phosphorus near the opposite edges of the plate, and 0.150 per cent in the center; and in a steel rail selected at random:

	Per cent. phosphorus.
At the top of rail.....	0.120
In head of rail, 1 inch from top	0.112
In the web, 2 inches from top..	0.127
In the center of flange.....	0.113

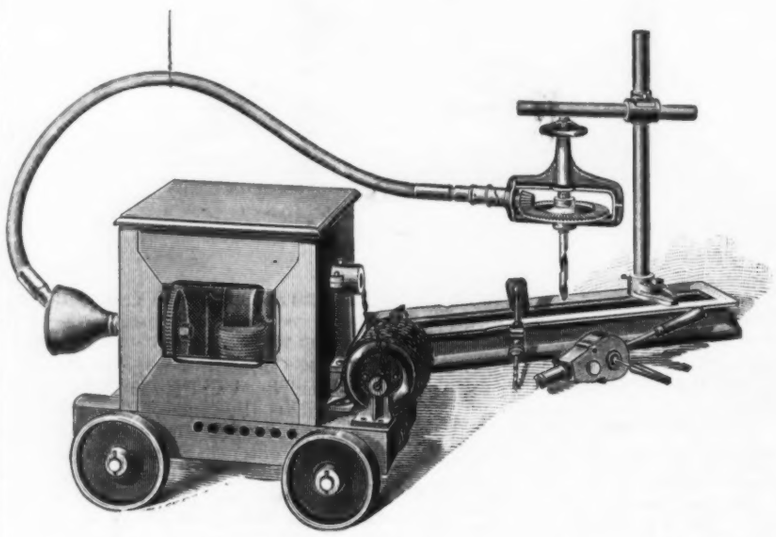
These results were checked by duplicate determination.

*Read before the Engineers' Society of Western Pennsylvania.

The Stow Flexible Shaft Driven by Electric Motor.

A novel and at the same time very convenient method of driving the well-known Stow flexible shaft is shown in the accompanying engraving. This is an electric portable drilling, tapping and reaming plant that can, without trouble or loss of time, be carried to any distance from the source of power. The motor has a normal speed of about 600, which can be increased by Rheostat to 1000 and 1200, and reduced by gears to 275 without loss of power. These motors are made for a voltage of either 110, 220 or 500.

By referring to the cut it will be seen that the motor which is specially designed for low speed is inclosed in a box mounted upon wheels, thus permitting of its quick and easy transportation to any desired place. This machine is made by the Stow Mfg. Company of Binghamton, N. Y.



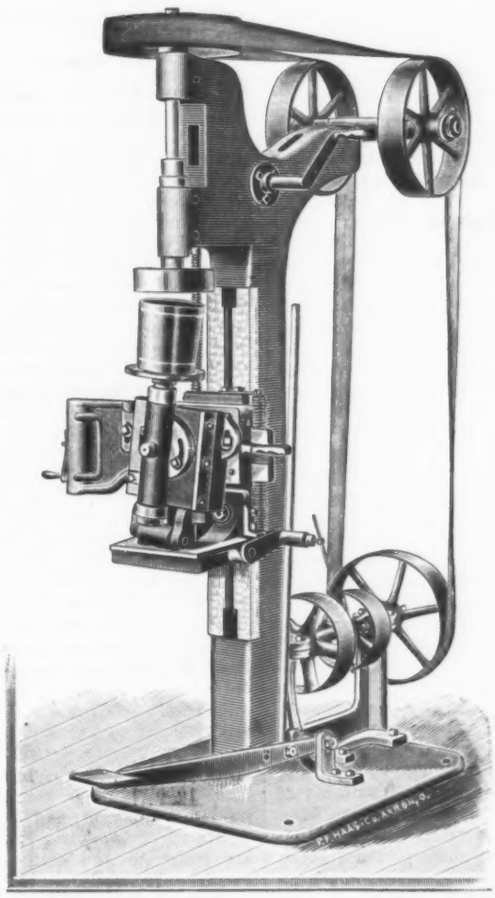
THE STOW FLEXIBLE SHAFT DRIVEN BY ELECTRIC MOTOR.

A speech delivered by the Governor at Newfoundland at the close of Parliament pronounced the measures taken for the construction of railways through the country connecting all important centers, and the contracts since made for the execution of the work, as promising full compensation to the colony for all the outlay required. When com-

pleted the colony will have a debt of about $13,000,000. It has a population of 202,000.

Automatic Wiring and Imitation Wiring Machine.

Our engraving illustrates a new automatic machine which is designed for either genuine or imitation wiring of the edges of sheet metal packages. The machine is intended to make genuine or false wire on all kinds of cans, pails, pieced tinware, measures, &c. It can be arranged to be operated on either tin, sheet iron or steel. It is capable of handling either straight or conical packages and will hem, roll, false wire or wire, as may be desired, it being only necessary to change the chucks according to the diameter of the work to be done. This machine is made by G. A. Crosby & Co., 170 South Clinton street, Chicago.



PATENT AUTOMATIC WIRING AND IMITATION WIRING MACHINE.

The British Admiralty have given orders to commence the construction of the new first-class battleship "Magnificent." She is to be built at Chatham dockyard, and is one of the two vessels provided for under the Spencer programme. Her length will be 390 feet and extreme breadth 75 feet, making her the largest battleship in the world. She will also be more powerfully armed than any other vessel in the British navy. Her armament will consist of four 46-ton breech-loading guns of a new pattern, with a heavy secondary armament of quick-firing and machine guns. A speed of 18 knots is anticipated with engines developing 13,000 horse-power. The designs for two first-class cruisers, the "Terrible" and the "Powerful," which are intended to accomplish a speed approaching that of torpedo boats, are in an advanced state.

A Rhode Island sculler rejoices in possessing an aluminum shell, made wholly of that metal, that weighs only 23 pounds, all rigged. It measures 31 feet 8 inches over all, but is less than a foot wide

Certain parties in New York have been importing pearl disks as mother-of-pearl, thereby evading the higher tariff on pearl buttons. The courts have decided in their favor; but pearl button manufacturers urge an appeal by Government on the ground that the blanks are *de facto* pearl buttons, requiring simple drilling, and that their importation under the lower tariff rate is prejudicial to the growing native industry in those goods.

A windstorm on the 23d ult. did considerable damage in the Indiana gas belt. The roof of part of the American Tin-Plate Works at Elwood was blown off and one of the buildings suffered even further injury. At Marion the roaster building of the Columbia Zinc Works was blown over and the smoke-stack toppled on the main building, crushing part of the walls.

It has been formally announced that John H. Inman and associates have bought the last 13,000 shares of the 47,500 shares of Tennessee Coal and Iron stock acquired by H. F. De Bardeleben at the time of the absorption of the De Bardeleben property. It is understood that the syndicate paid about 15 for the stock. Mr. De Bardeleben will not sever his connection with the company, but will occupy a salaried position.

Western Failures

The Minnesota Blast Furnace Company of Duluth, Minn., passed into a receiver's hands on the 25th ult. The receiver appointed is W. H. H. Stowell of the Duluth Iron & Steel Company, owners of the furnace. The Minnesota Blast Furnace Company were lessees and were manufacturing Bessemer pig iron for the West Superior Iron & Steel Company, hence became embarrassed through the troubles into which the latter company have fallen. Efforts are being made by the stockholders of the steel company to reorganize and put their affairs again on a working basis. If this is done the furnace company will be relieved also of their difficulties. Pending the adjustment of the difficulty the blast furnace has been blown out. Charles Himrod & Co. and Crerar, Clinch & Co. of Chicago are the principal stockholders of the furnace company. They have the sympathy of the trade in their troubles, which, as will be seen, are due to no mismanagement on their part.

Judge Collins of Chicago, on May 22, appointed Thomas Gillespie receiver for the Chicago Foundry Company, and required him to give a bond of $10,000. The action was taken on the application of the company All the stockholders except Henry A. Keith, the bill stated, had decided that the affairs of the concern could no longer be run profitably, and that the court should take a hand. The failure is due to the strike among the employees of the foundry, which has been on for about three weeks. To the employees alone is due over $5000. The company were organized 16 years ago with a capital stock of $60,000 and did an extensive business. The stockholders are William W. Flinn, E. Dyer and Mark Dyer.

B. H. & J. Sanford, proprietors of the Phœnix Iron Works, Sheboygan Falls, Wis., made an assignment on May 26. Their assets are placed at $25,000 and liabilities at $12,000.

Lord Brassey in his "Naval Annual" for 1893 emphasizes the importance to Great Britain of maintaining a fleet sufficiently strong to effectively protect the British merchant navy whenever such a necessity may arise, and points out that such strength can only be gauged by comparison with that of the war vessels possessed by other powers. He thinks that an annual expenditure of $12,000,000 would certainly not be excessive for the British Navy.

Mayor Gilroy represents that the cost of educating a member of the nautical school at this port is nearly $500 a year, and is exorbitant compared with cost in the public schools.

It is stated that the nine-hour movement recently inaugurated among the brass workers of Boston and vicinity is meeting with success, and that eight of the leading brass concerns have acceded to the demands of their workmen for a nine-hour work day without reduction of wages.

Plan of Machinery Hall.

[*With Supplement.*]

In our supplement this week we present the plan of the ground floor of Machinery Hall and its several annexes. The engraving is a photo-reproduction of the original official drawing, which was kindly loaned us for the purpose through the courtesy of Chief Foster of the Engineering Bureau. As the final entries of the space allotments were made but the day before, this is, consequently, the first publication of the plan in its completed form, showing the location and amount of space occupied by each exhibitor. The lists of boilers, engines, dynamos and pumps in the main power plant refer to the plan by number or letter and constitute a key by which the location of any individual exhibit in this group may be easily found. The size and shape in plan of the main building are indicated by the heavy black shading, while the lines showing the annexes are not so heavy. The floor of the main annex is an uninterrupted continuation of that of the main building, from which it can be distinguished only by the difference of the superstructure. The runways of the three electric traveling cranes and the line shafts carried by the columns of the former are continuous for the entire length of the two buildings less the width of gallery at east end—a distance of about 1300 feet. In the angle formed by the southeast corner of the main building and the fire room annex is located the water works pumping station, containing three Worthington pumping engines, now in service, whose aggregate capacity is 35,000,000 gallons in 24 hours. The fourth engine (5,000,000 capacity) has not yet arrived, though the foundations have been ready for over a month. The two fire service pumps are also located in this building, the positions of which are shown in the drawing. The main fire room is contained in the south annex to the main building, but as its capacity was insufficient to contain all of the boiler exhibits, it became necessary to utilize the annex immediately to the west, which communicates with it by a subway under entrance to the southwest corner pavilion of the main building. The next section contains at present the extensive machine shops of the exposition, and will be utilized for the large exhibit of the Pond Machine Tool Company. The western section is at present used as a general storeroom for engineering supplies. The firerooms are isolated from the main structures by brick walls and fire-proof doors.

It is possible that necessary changes may be made in the occupation of many of the spaces, as some of those to whom allotments have been made have not yet made the first steps toward installing their exhibits.

In connection with the plan a brief *résumé* in detail of the condition of exhibits, or rather, of the progress of their installation, at the close of the third week since the opening of the exposition (Saturday, May 20), will serve to convey a more accurate idea of the facts than would be possible from a general undetailed statement, which, from leaving so much room for inference, must necessarily be more or less misleading. The official catalogue gives the total number of exhibits in the department of machinery as 864, divided among the different nationalities as follows: United States, 564; Austria, 3; Belgium, 26; Canada, 40; Ceylon, 4; Denmark, 13; Germany, 116; Great Britain, 61; Italy, 16; Japan, 12; Norway, 1; Sweden, 8. This includes not only the exhibits in Machinery Hall and its contiguous annexes, but also those in detached locations, such as saw mill annex, fire service stations, fuel oil pumping station, electric railway power station, &c. The number of such isolated exhibits is considerable, and, if deducted from above total, will leave certainly not over 850.

A systematic and careful personal inspection of such exhibits as are included in this number resulted in ascertaining the following facts: The number of fully completed exhibits—that is, such as are in proper condition for inspection of visitors, and upon which no work of any description remains to be done—is not over 180. This includes machinery ready for or in operation, of such as is intended to be run during the exposition; all machinery and other classes of exhibits which from their character, or the intention of exhibitors, will be displayed only in the quiescent state, and such articles and materials as are intended to constitute component parts of completed machinery or apparatus. In addition to the above there are about 100 exhibits the installation of which, though practically completed, requires considerable work in the way of finishing touches, putting on of belts, pulleys and belts on line shafts, cleaning up and putting exhibits and spaces in presentable shape, &c. There are many spaces in which there is only required the presence of an attendant to remove protecting covers and do a little house cleaning, but without which they are certainly not in condition to be considered as exhibits, and are passed by without notice by visitors.

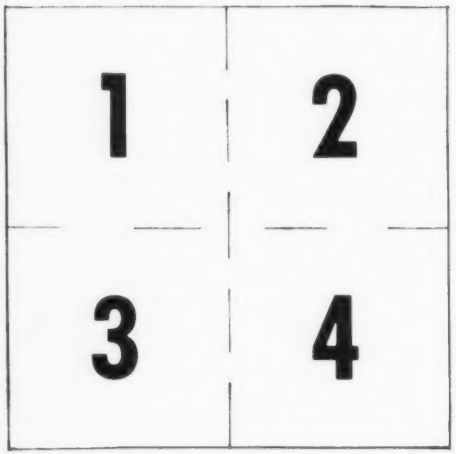
Of the remaining 570, the large majority are in various stages of completion, for which, at present rate of working, it will require from a few days to several weeks to place them in proper condition. Many others, scattered throughout the buildings, still remain untouched in their packing cases, or in the same condition as when unloaded from the cars or wagons. And in not a few cases the spaces are totally unoccupied by exhibits of any description, presumably through the tardiness of the parties to whom they have been allotted, and the effect is, to say the least, unfortunate, as it presents many large gaps which suggest anything rather than an insufficiency of space to meet the requirements of applicants.

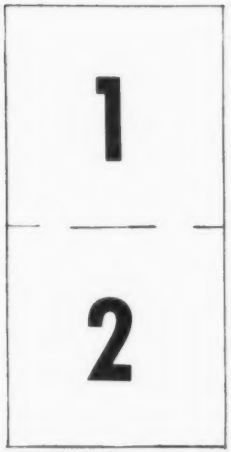
The condition of power plant is briefly as follows: In the space occupied by the Worthington exhibit there are some 20 additional pumps recently received, none of which are yet on their foundations, although a large force of workmen are engaged in setting them. These will probably be completed before the end of the month. The triple-expansion vertical engine and two 400 K. W. generators of the General Electric Company will, apparently, be ready for continuous service within one week. The four 200 K. W. Edison generators are all ready, two of them being in operation, and the others awaiting the completion of work on the Ball cross-compound engine, which will occupy but a day or two. The first pair are driven by the 400 horse-power Armington & Sims engine. The four 250 K. W. Eddy generators are ready, two being in operation from the 250 horse-power tandem compound and the 250 horse-power simple expansion Phœnix engines. The other pair are awaiting the 500 horse-power triple-expansion Phœnix engine, upon which the work may be completed in a week or ten days. The 500 horse-power Allis cross compound engine is making but little progress, and the 500 K. W. Westinghouse railway generator is not within sight, which is probably the cause of delay on the engine. At least a couple of weeks will be required for completion after the generator arrives. The four C. & C. 100 K. W. generators and four Mather generators, driven, respectively, by one 225 horse-power tandem compound, one 200 horse-power simple A. L. Ide engines, and one 375 horse-power and one 600 horse-power Woodbury tandem compound, are in operation. Five Ball & Wood engines—one 200 horse-power cross compound, two 150 horse-power simple expansion, two 150 horse-power tandem compound—are now in operation in driving 16 60-light Brush arc dynamos.

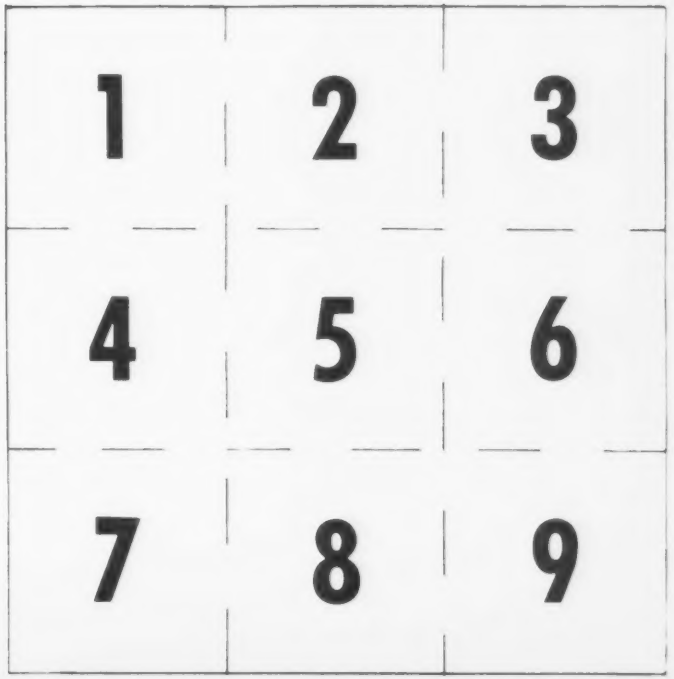
The Fraser & Chalmers 1000 horse-power triple-expansion engine and the 10,000-light Westinghouse incandescent dynamo appear to be ready, but are not yet in operation. A 220 horse power Ewing tandem compound engine, employed in driving two C. & C. 100 K. W. generators, is undergoing necessary repairs, and will probably be ready in a few days. Two Westinghouse, Church, Kerr & Co. 330 horse-power engines, together with two 4000-light incandescent dynamos and two exciters, are in continuous operation. Three other smaller engines and dynamos of same type are ready for use. The Allis quadruple-expansion engine, although ready for some weeks, is not in operation, and is probably waiting for the second belt, which is still conspicuously absent. Two of the six 1000 horse-power vertical compound W., C., K. & Co. engines are about ready, and will probably be running during the coming week. The other four engines are in various stages of progress; two of them will require but a few days' work, and the others from ten days to two weeks. With the exception of one, all of the 12 10,000-light Westinghouse dynamos are ready · three are waiting completion of engines and belts. The immense and elaborate switchboard of the Westinghouse system is now ready for service and presents a very handsome appearance. The 1000 horse power Atlas double tandem compound, and the 1000 horse-power triple-expansion Buckeye engines are complete and belted to their respective 10,000-light dynamos. The 1000 horse-power McIntosh & Seymour double tandem compound progresses very slowly, and will require over a week of energetic work to place it in condition for duty. Five Buckeye engines—cross and tandem compound, and simple expansion, aggregating 890 horse power—are running on 14 Fort Wayne 60 light arc dynamos. Twenty Standard 50-light arc dynamos are in operation by one Erie City simple expansion engine, one 600 horse-power Russell double tandem compound, and one of same type of 220 horse-power.

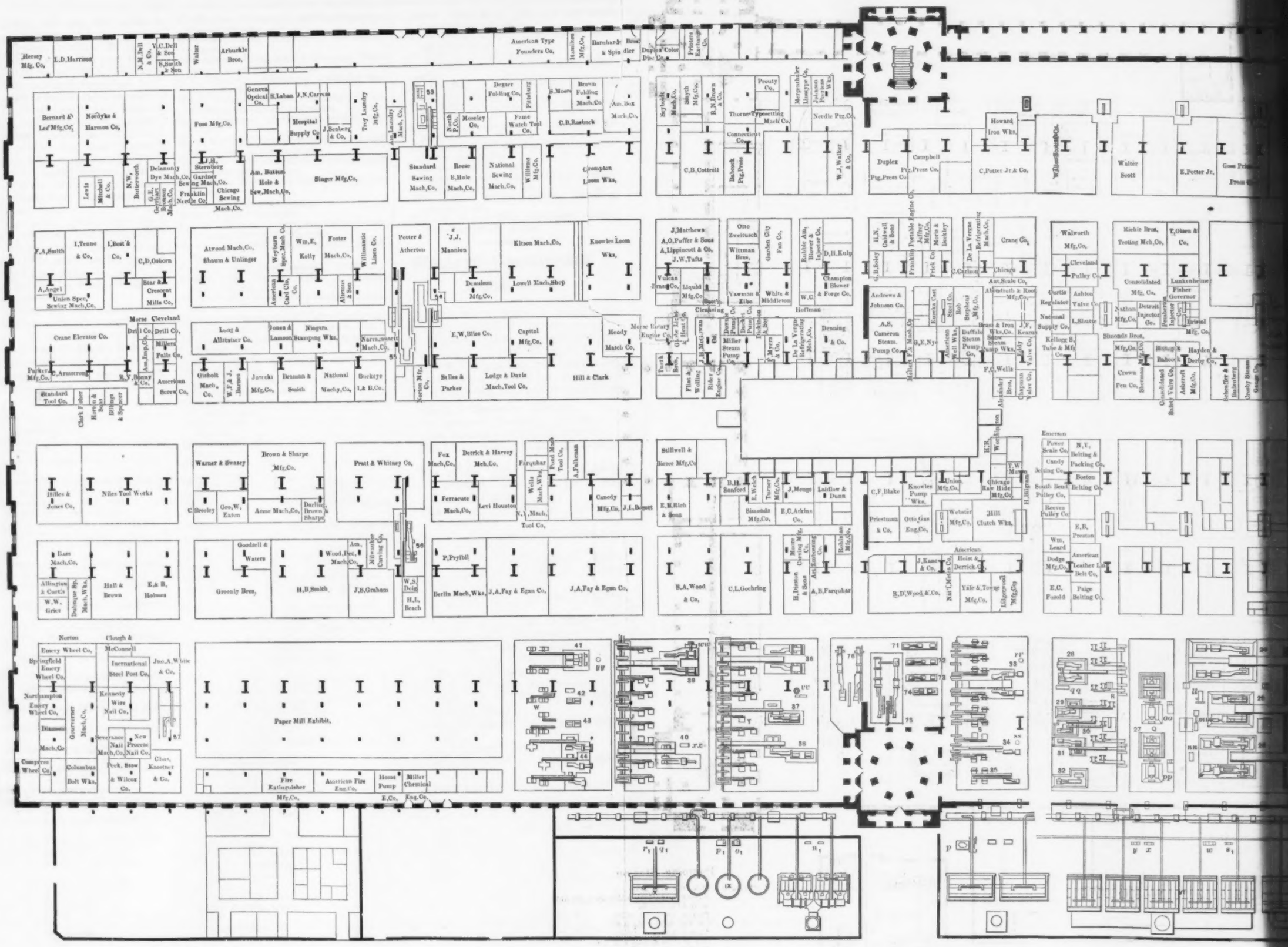
Four Norwalk air compressors are in continuous operation. One Rand Drill Company air compressor with cross compound Corliss engines is in course of erection, and may require about two weeks for completion. Sixteen Thomson & Houston 50-light arc dynamos are completed, together with their motive power, comprising one 300 horse-power cross compound, one 300 horse-power tandem compound, and one 200 horse-power simple expansion Lane & Bodley Corliss engines. Ten more of same type dynamos, and six Excelsior machines are run from line shaft, driven by one 500 horse power Atlas tandem

Maps on this order too large to be entirely included in one exposure are filmed clockwise beginning in the upper left hand corner, left to right and top to bottom as many frames as required. The following diagrams illustrate the method.









Air Compressors.

Norwalk Iron Works,	26 x 30	
" " "	20 x 24	
" " "	20 x 24	
" " "	16 x 16	
Rand Drill Co.		
Ingersoll Sergeant		

Boilers in Power Plant.

			Com. H.-P.
I	Root,	2 Bat., 4 Boilers,	1500
II	Gill,	2 " 4 "	1500
III	Heine,	2 " 8 "	3750
IV	National,	2 Bat., 4 Boilers,	1500
V	Campbell & Zell,	5 Bat., 9 Boilers,	3750
VI	Babcock & Wilcox,	5 " 10 "	3000
VII	Stirling,	2 Bat., 4 Boilers,	1800
VIII	Heine,	1 " 4 "	1900
IX	Climax,	3 "	2000
X	Stirling,	2 "	900

Engines in Power Plant.

		H.-P.			H.-P.			H.-P.
1	Ball cross comp.	480	16	Ball & Wood tand. comp.	150	31	Buckeye simple	190
2	Armington & Sims simple	400	17	E. P. Allis quad. exp. cond.	2000	32	" tand. comp.	150
3	General Elec. trip. exp. con.	1000	18	Fraser & Chalm. trip. exp. con.	1000	33	Russell double tand. comp. con.	506
4	Phœnix trip. exp. cond.	500	19	McEwen tand. comp. cond.	220	34	" " " "	216
5	" tan. comp. cond.	250	20	Westingh., Church, Kerr. comp. cond.	330	35	Erie City simple	200
6	" simple	250	21	" " " "	330	36	Lane & Bodley cross comp. con.	300
7	E. P. Allis cross comp. cond.	500	22	Three " " " "		37	" " simple	200
8	Woodbury tand. " "	600	23	Four " " " "	1000	38	" " tand. comp. con.	300
9	" " " "	375	24	Buckeye trip. exp. comp.	1000	39	Bass cross comp. cond.	224
10	A. L. Ide simple	200	25	Atlas comp. cond.	1060	40	Atlas tand. " "	500
11	" " tand. comp. cond.	225	26	McIntosh, Seymore double tan. com.	1000	41	Watertown double tand. comp. cond.	250
12	Ball & Wood tand. comp.	750	27	Westingh., Church, Kerr com. con.	1000	42	Erie City simple	200
13	" simple	150	28	Buckeye cross comp. cond.	300	43	New York Safety simple	150
14	" cross, comp.	200	29	" simple	125	44	Three Russell simple engs. total,	400
15	" simple	150	30	" "	125	45	Siemens & Halske	

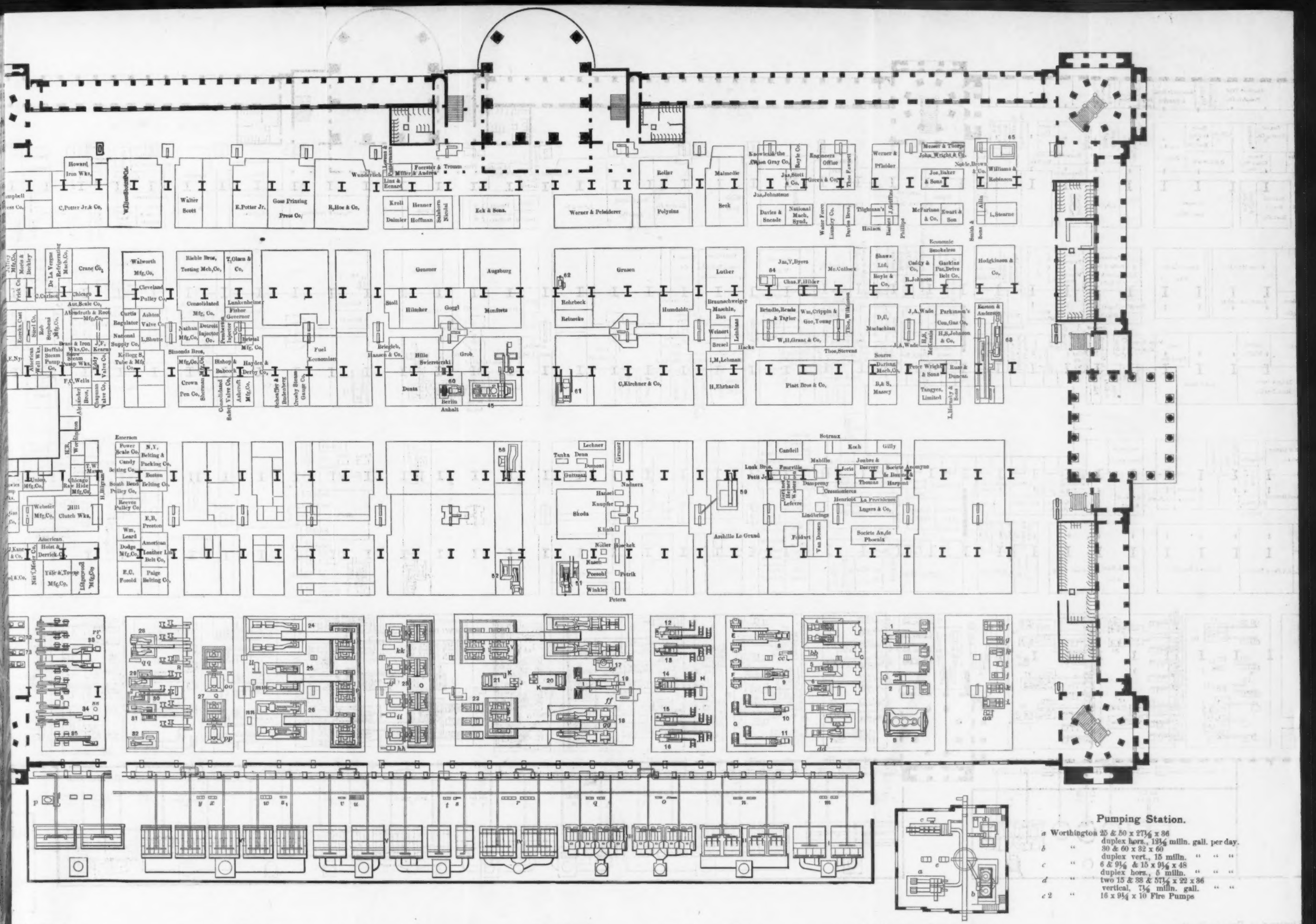
Engines for Line Shafts.

		H.-P.
51	Ideal tandem engine,	300 H.-P.
52	" " "	300 "
53	Bates engine,	300 "
54	Golden State engine,	200 "
55	Green engine,	225 "
56	Sioux City engine,	350 "
57	Payne's Corliss eng.,	110 "
58	Erie City engine,	300 "
59	Allis simple (vert),	250 "
60	Schichau (Germ.).	
61	Wolf "	
62	Grusonwerk "	
63	Galloway (Engl.).	
64	Willan's "	
65	" "	

Dynamos.

A	4	Edison Power Generators,	200	H.-P. each.	
B	2	" Multipolar "	500	"	
C	4	Eddy Power "	250	"	
D	1	Westingh. Railway "	500	"	
E	2	Mather Power "			
F	2	" " "			
G	4	C. and C. "	100	"	
H	16	Brush Arc Power Dynamos,	60	Lights each.	
I	2	C. and C. Power Generators,	100	H. P each.	
J	2	Westingh. Incand. Dynamos,	4000	Lights each.	
K	2	" Exciters.			
L	1	" Incand. Dynamo,	10,000	"	
M	3	" Exciters.			
N	2	" Incand. Dynamos,	10,000	" each.	
O	4	" " "	10,000	" "	

PLAN OF MACHINERY HALL, WORLD'S CO



Pumping Station.

a	Worthington	25 & 50 x 27½ x 36 duplex hors., 12½ milln. gall. per day.
b	"	30 & 60 x 32 x 60 duplex vert., 15 milln. " " "
c	"	6 & 9½ & 15 x 9½ x 48 duplex hors., 5 milln. " " "
d	"	two 15 & 33 & 57½ x 22 x 36 vertical, 7½ milln. gall. " "
e 2	"	16 x 9¼ x 10 Fire Pumps

r Line Shafts.

	n engine,	300 H.-P.
	"	300 "
	e,	300 "
	e engine,	200 "
	e,	225 "
	engine,	850 "
	liss eng.,	110 "
	gine,	300 "
	(vert.),	250 "
	Germ.),	
	"	
	Engl.),	
	"	

Dynamos.

A 4	Edison Power Generators,	200	H.-P. each.
B 2	" Multipolar "	500	"
C 4	Eddy Power "	250	"
D 1	Westingh. Railway "	500	"
E 2	Mather Power "		
F 2	" " "		
G 4	C. and C. " "	100	"
H 16	Brush Arc Power Dynamos,	60	Lights each.
I 2	C. and C. Power Generators,	100	H. P each.
J 2	Westingh. Incand. Dynamos,	4000	Lights each.
K 2	" Exciters.		
L 1	" Incand. Dynamo,	10,000	"
M 3	" Exciters.		
N 2	" Incand. Dynamos,	10,000	" each.
O 4	" " "	10,000	" "

			Lights each.
P 3	Westingh. Incand. Dynamos,		10,000
Q 2	" " "		10,000
R 14	Ft. Wayne Arc "		60
S 20	Standard "		50
T 16	Thomson H. "		50
U 10	" "		50
V 6	Excelsior "		50
W 10	Western Elec Arc "		50

Feed Pumps.

m	2 Dean 7½ x 4½ x 10	*v*	1 Canton.
n	2 Barr 9 x 5½ x 10	*w*	1 Snow 8 & 12 x 7 x 12
o	2 Knowles 10 x 5 x 10	*x*	1 " 10 x 6 x 10
p	1 Goulds 10 x 12	*y*	1 " 8 x 5 x 10
q	2 Blake 8 x 5 x 12	*z*	1 Buffalo 10 x 6 x 10
r	2 Davidson 12 & 20 x 10½ x 20	m_1	1 " 7½ x 5 x 8
s	1 Cameron	n_1	2 Battle Creek 10 x 6 x 12
t	1 Laidlaw 7½ x 4½ x 10	o_1	1 Blakesley 10 x 6 x 14
p_1	1 Smedley 12 x 7 x 15	q_1	1 Hall 8 x 5 x 10
r	1 McGowen 8 x 5 x 10	s_1	1 Valley
u	1 Wilson, Snyder 14 x 8 x 18		

Heaters

a	Baragawath & Sons.
b	" "
c	Stillwell & Bierce.
d	Hopper Mfg. Co.
e	Wainwright Mfg. Co.
f	National Pipe Bending Co.
g	Kroeschell & Bourgeois.
h	Stillwell & Bierce.
i	Warren, Webster & Co.

Condensers.

aa	Worthington jet cond.		
bb	Davidson 12 x 20 x 24 jet cond.		
cc	" 12 x 20 x 24 "		
dd	Allis direct con.	"	(500 H. P.)
ee	" " "	"	(2000 "
ff	Blake 8 x 14 x 12	"	(McE.)
gg	Connover 1000 H.-P.	"	(F. & C.)
hh	Wainwright 1200 H.-P. surf. cond. Dean air and circ. pump.		
ii	Wainwright 1200 H.-P. surf. cond. Dean air and circ. pump		
jj	Wheeler 1200 H.-P. surf. cond., air pump.		
kk	" " " " " air and circ. pump.		
ll	Wainwright 1000 H.-P. surf. cond.		
mm	Knowles jet cond.		
nn	Blake jet cond.		
oo	Worthington jet cond.		
pp	" "		
qq	Wheeler 800 H.-P. surf. cond. Conover air pump.		
rr	Blake 12 2-20 x 12 jet cond.		
ss	" 8 x 12 x 12 "		
tt			
uu			
vv	Davidson 12 x 20 x 24 jet cond.		
ww	Wheeler 400 H.-P. surf. cond. Knowles air pump.		
xx	Blake 12 2-20 x 12 jet cond.		
yy	Knowles 7½ x 15 x 10 jet cond.		

Circulating Pumps.

	Worthington	18¾ & 29 x 17 x 18
g	"	16 & 25 x 15 x 15
h	"	14 x 22 x 15
i	"	12 x 14 x 10
j	"	14 x 19 x 15
k	"	29 x 20 x 18
l	"	14 & 24½ x 20 x 18

RY HALL, WORLD'S COLUMBIAN EXPOSITION.

compound engine, and one 225 horse-power Boss cross compound in operation. Ten Western Electric 50-light arc dynamos and one of their new type multipolar generators of 150 K. W. are completed. The power is furnished by one 250 horse-power double tandem compound Watertown engine; two 150 horse-power Skinner, and three Russel simple expansion engines. In addition to these machines comprising the main power plant, there are a large number—probably 20 or more—isolated engines, scattered throughout the building. These, with but few exceptions have been in operation for some time.

On the large paper mill exhibit the work is entirely stopped, and there still remains enough to require upward of a month to place it in condition for operation. The line shaft and a W., C., K. & Co. engine for driving the mill have been ready for some time.

In the following list are mentioned all of the exhibits properly completed for inspection. If there are any omissions, it is due to the fact that the articles were not conspicuously displayed. No attempt at classification is made, and the exhibits are named in the order noted.

Harden Hand Fire Extinguisher Company, hand grenades, &c.
Fire Extinguisher Mfg. Company, fire extinguishers.
Miller Chemical Engine Company, fire extinguishers.
Lindgren-Maban Fire Extinguisher Company, fire extinguishers.
Waterbury Rubber Company, hose.
Chas. Kaestner & Co., malt mills.
Acme Machine Company, Cleveland, Ohio machine tools.
H. B. Smith Company, wood-working machinery.
Brown & Sharpe Mfg. Company, machine tools, &c.
Darling, Brown & Sharpe, machinists' small tools
Pratt & Whitney Company, machine tools.
P. Pryibil, wood-working machinery.
Berlin Machine Works, wood-working machinery.
Ferracute Machine Company, forming presses, &c.
Levi Houston, wood-working machinery.
J. A. Fay & Egan Company, wood-working machinery, &c.
Merrill Mfg. Company, pipe-cutting machines.
Clough & McConnell, corkscrew machinery.
S. A. Woods, wood-working machinery.
A. B. Farquhar & Co., engines, &c.
Henry Disston's Sons, saws, tools and files.
E. C. Atkins & Co., saws, &c.
R. D. Wood & Co., cast-iron pipe and hydraulic machinery.
Yale & Towne, chain hoists and hoisting apparatus.
Lidgerwood Mfg. Company, electric and steam hoisting apparatus.
Dodge Mfg. Company, power transmission.
Chas. Schieren & Co., belting, &c.
New York Belting & Packing Company, belting and rubber goods.
A. Decoufle, Paris, cigarette machinery.
A. Schwetzer, mills.
R. Hornsby & Sons, England, engines.
Peter Wright & Sons, England, anvils, &c.
B. & S. Massey, England, steam hammers.
Platt Bros. & Co., England, cotton machinery.
W. H. Grant & Co., England, silk looms.
Messer & Thorpes, England, bucket fire extinguisher.
J. M. Lehmann, Germany, confectioners' machinery.
H. Bertram, Germany, dough machinery.
Seck Bros., Germany, milling machinery.
G. Luther, Germany, malt mills.
Braunschweiger Maschinenbauanstalt, Germany, sugar machinery.
G. Polysius, Germany, stone crushers and roller mills.
Fried. Krupp, Germany, parts of machinery, forgings, &c.
A. Roller, Germany, match, and match box machinery.
R. Wolf, Germany, engines.
F. Schichau, Germany, 1000 horse-power triple-expansion engine.
Maschinenfabrik, Augsburg, Germany, rotary press.
Grusonwerk, Magdeburg-Buckau, Germany, motors and engines.
J. C. Reinecker, Germany, tools for machinery repairing.
Ernst Kirchner & Co., Germany, wood working machinery and saws.
Ernst Gessner, Germany, textile machinery.
G. A. Kroll & Co., Germany, patented screws and dumb waiters.
Gasmotor Fabrik Deutz, Germany, gas and petroleum engines.
Foerster & Tromm, Germany, ruling machines.
Lunkenheimer, valves, &c.
Fisher, engine governor.
Bristol's Mfg. Company, recording pressure gauges and belt fastener.
Hayden & Derby Mfg. Company, injectors, &c.
Goss Printing Press Company, presses.
Consolidated Safety Valve Company, safety valves, &c.
Ashcroft Mfg. Company, pressure gauges, &c.
Crosby Steam Gauge & Valve Company, steam gauges, valves, indicators, &c.
Penberthey Injector Company, injectors, oil cups, &c.
Sherwood Mfg. Company, engine and boiler supplies.
Crown Pen Company, manufacturing fountain pens for sale.
Simons Bros & Co., manufacturing silver thimbles, &c.
Nathan Mfg. Company, steam engine supplies.
Consolidated Mfg. Company, brush machinery, &c.
Cleveland Faucet Company, hand air compressors, &c.
Walworth Mfg. Company, valves, &c.
Reiblé Bros., testing machines, &c.
Tinius Olsen & Co., testing machines, &c.
Walter Scott & Co., lithographic presses.
Crane Company, steam, water and gas supplies.
Davis-Creswell Mfg. Company engines.
I. T. Kearns & Co., valves, &c.
Chapman Valve Company, valves, &c.
Standard Tool Company, machinists' small tools.
Cleveland Twist Drill Company, drills and machinists' small tools.
The Brass & Iron Works, Fostoria, Ohio, well drilling tools, valves, &c.
Frick & Co., ice machine.
De la Vergne Refrigerating Company, ice machines.
W. H. Caldwell & Son, elevating and conveying machinery, &c.
Jeffrey Mfg. Company, elevating and conveying machinery, &c.
Michel Printing Press & Mfg. Company, printing presses.
Babcock Printing Press & Mfg. Company, printing presses.
Cox, printing presses.
R. Hoe & Co., printing presses.
C. B. Cottrell, printing presses.
Duplex Color Disk Company, printing presses.
T. W. & C. B. Sheridan, bookbinders' machinery, &c.
Schneidevend & Lee, bookbinders' machinery, &c.
Golding & Co., printing presses, &c.
Thorne Typesetting Machine Company, typesetting machinery.
American Type Founders' Company, type-casting machinery.
Hamilton Mfg. Company, printers' materials
Barnhardt Bros. & Spindler, presses and type-casting machinery.
Johnson Peerless Works, printing presses, paper cutters, &c.
American Box Machine Company, paper-box machinery.
Saml. Moore, bead chain machinery, and products.
Knowles Loom Works, looms and textile machinery.
Crompton Loom Works, looms and textile machinery.
Star & Crescent Mills Company, looms and textile machinery.
F. P. Rosback, toilet-paper machine.
Dexter Folder Company, paper folders, &c.
Lowell Machine Shop, textile and spinning machinery.
Kiston Machine Company, cotton-goods machinery.
Schaum & Ulinger, silk looms.
National Sewing Machine Company, sewing machines.
Reece Buttonhole Machine Company, buttonhole machines.
E. W. Bliss Company, drawing and forming presses, &c.
E. Horton, lathe chucks.
C. D. Osborne & Co., gloves and machinery.
H. W. Butterworth & Sons, tentering and drying machines, &c.
E. P. Allis & Co., flour mill machinery, &c.
Chas. Lippincott & Co., soda-water apparatus.
Jno. Matthews Apparatus Company, soda-water apparatus.
Stephens Mfg. Company.
Morgan Engineering Company, electric traveling cranes in use.
Wm. Sellers & Co., electric traveling cranes in use.
Yale & Towne Mfg. Company, electric traveling cranes in use.

Western Foundrymen's Association.

A meeting of Western foundrymen was held on May 25, in the rooms of the Detroit Foundry Equipment Company, Temple Court, Chicago, for the purpose of organizing an association. The call for the meeting had been signed by the following firms and corporations:

Fraser & Chalmers, Chicago.
The Sargent Company, Chicago.
Allen Foundry Company, Detroit.
The Lloyd Booth Company, Youngstown, Ohio.
The Globe Iron Works Company, Cleveland, Ohio. J. F. Pankhurst, General Manager.
The General Engineering Company, Harvey, Ill.
Dayton Malleable Iron Company, Dayton, Ohio.
J. N. Barr, Superintendent Motive Power, C., M. & St. P. Railway Company, Milwaukee.
Lake Shore Iron Works Company, Marquette, Mich.
Thos. D. West, Thos. D. West Foundry Company, Sharpsville, Pa.
Walburn-Swenson Company, Chicago.
F. E. Drury, Cleveland Foundry Company, Cleveland, Ohio.
Detroit Foundry Equipment Company. J. H. Whiting, President, Detroit, Mich.
Gobeille Pattern Company, Cleveland, Ohio.
Patch & Swift, Streator, Ill.
Craig-Reynolds Foundry Company, Dayton, Ohio.
Shaw, Kendall & Co., Toledo, Ohio.

Those who met in compliance with the call were as follows:

C. A. Sercomb, Schwab & Sercomb, Milwaukee, Wis.
S. H. Holley, Lake Shore Foundry Company, Marquette, Mich.
Wm. Hardee, Shaw, Kendall & Co., Toledo, Ohio.
J. Bowie, Walburn-Swenson Company, Chicago Heights, Ill.
J. L. Gobeille, Gobeille Pattern Company, Cleveland, Ohio.
C. M. Conradson, Fuller & Johnson Mfg. Company, Madison, Wis.
J. E. Griffen, South Milwaukee Malleable Iron Company, Milwaukee, Wis.
James Frake, formerly L. M. Rouse & Co., Chicago.
John M. Sweeney, General Engineering Company, Harvey, Ill.
A. L. Patch, Patch & Swift, Streator, Ill.
H. W. Hurlbut, Hurlbut Mfg. Company, Racine Junction, Wis.
C. A. Plamondon, A. Plamondon Mfg. Company, Chicago.
Theo. P. Byram, Byram & Co., Detroit, Mich.

Chas. S. Reed, Chicago Retort & Fire Brick Company, Chicago.
H. S. Vrooman, Garden City Sand Company, Chicago.
J. H. Whiting and A. T. Whiting, Detroit Foundry Equipment Company, Detroit and Chicago.
W. D. Sargent, Sargent Company, Chicago.
Franklin Moeller, Webster, Camp & Lane Machine Company, Akron. Ohio.
A. I. Findley, *Iron Trade Review*, Cleveland, Ohio.
B. M. Gardner, *Iron Trade Review*, Cleveland, Ohio.
J. A. Penton, *The Foundry*, Detroit, Mich.
Geo. W. Cope, *The Iron Age*, Chicago.

Mr. Findley called the meeting to order, stated the purpose of the gathering and asked for nominations for chairman. C. A. Sercomb was named and unanimously elected, making a short but very practical address on taking the chair. A. T. Whiting was elected temporary secretary. Letters were read from Thos. D. West of Sharpsville, Pa.; Indiana Car & Foundry Company of Indianapolis, Ind.; R. C. McKinney, Niles Tool Works, Hamilton, Ohio; W. J. Keep, Michigan Stove Company, Detroit, Mich.; Sandusky Machine & Agricultural Works, Sandusky, Ohio; John T. Noye Mfg. Company, Buffalo, N. Y., and the Lane & Bodley Company of Cincinnati, regretting inability to attend, but expressing themselves strongly in favor of the organization of an association for mutual benefit. A communication from Francis Schumann, president of the Foundrymen's Association of Philadelphia, giving some points regarding the benefits of an association, was also read. In reply to a question Mr. Findley stated that invitations to attend the meeting had been sent to some 300 foundrymen in the central West.

General remarks having been called for by the chairman, Mr. Piamondon gave a brief statement of the Chicago local association, which had been formed some six months since to handle labor troubles. It numbered some 60 members at first, but as a disposition was evinced to deal with the molders' strike individually, interest in the association gradually subsided, and recent meetings had been very slimly attended. He welcomed the formation of an association of this character. Mr. Gobeille dwelt upon the educational advantages of an organization, giving some practical illustrations showing the necessity of foundrymen acquiring a better knowledge of their business, which could be gained to a great extent through the interchange of ideas and experiences. He advocated supporting a laboratory with an expert founder and chemist in charge, to test various brands of iron, experiment with mixtures, and report regularly for the benefit of the members so that they might have reliable data to govern them in their efforts to secure good castings. He thought that more precise technical knowledge on this subject would not only improve the work turned out, but would also enable a decided saving to be made in cost. Mr. Sweeney spoke on the subject of introducing more scientific methods in the operation of foundries, declaring that a chemist was almost an indispensable part of the working force. Mr. Penton thought that in organizing an association the question of wages and prices of castings should be avoided, leaving them for settlement by local associations. The association should be purely educational.

A desultory discussion followed, in which this view of the scope of the association was generally supported.

Motions were then made and carried declaring the organization permanent and providing for the appointment of a committee to prepare a constitution and by-laws. This committee consisted of Messrs. Sweeney, Penton, Conradson and Findley. It was resolved that all firms, corporations or persons who had agreed to attend the meeting, who have attended or written their approval of the objects of the organization, shall be entered by the secretary as members.

The draft of a constitution and by-laws was then reported by the committee, based on the plan of the Foundrymen's Association of Philadelphia, the organization to be styled the Western Foundrymen's Association, admission fee $5, dues $4 per year; monthly meetings to be held on the third Wednesday of each month at 7.30 p. m., the annual meeting on the third Wednesday in May, and headquarters to be located in Chicago. Persons, firms or corporations practically engaged as employers in the production of castings or persons whose services or knowledge is valuable toward the objects of the association are eligible to membership.

After the adoption of the constitution and by-laws a Committee on Nominations of Officers for the ensuing year was appointed, consisting of Messrs. Sargent, Patch and Conradson, who shortly afterward recommended the following list, which was unanimously elected: President, C. A. Piamondon; vice-president, J. M. Sweeney; secretary, B. M. Gardner; treasurer, A. L. Patch. Executive Committee, C. A. Sercomb, S. H. Holley, Geo. W. Cope, J. E. Griffen and J. A. Penton. A resolution of thanks to the Detroit Foundry Equipment Company for the use of their rooms was adopted. The association then adjourned to meet on June 21 at the same place.

The British Government has ordered surveys to be made on the west coast of Africa with the view of laying down railway lines to connect their colonies in that region, and also to open up the interior of the continent. A light line is to be commenced in the British colony of Lagos on that coast, which will pass through the rich Yoruba country and tap the Niger region at Korin.

Some of the largest steel plates ever made in England have been turned out at the works of the Cousett Iron Company, Durham. They measure 60 feet 2 inches in length, 50 inches in width and $\frac{11}{16}$ inch in thickness. They are for use in the construction of some large cattle ships which are being built at West Hartlepool for a firm in the United States.

W. G. Clark of Adelaide, South Australia, has patented a new process for welding copper and iron. A piece of metal treated by his method is said to have been immersed in sea water for six months without showing signs of any weakening action. The process is cheap and is claimed to have received the approval of those who have used it.

The East bound passenger business to Europe is smaller than usual, but the Westward movement by the fast lines is on a good scale.

WORLD'S FAIR NOTES.

Installation Nearing an End.

There will always be a few people behindhand. Perhaps in July the sound of hammers and saw may be heard in some one of the buildings, showing that a belated exhibitor is at last getting something in shape. The work accomplished last week, however, brought forth many noticeable changes in sections that on the opening day were so far behind it then seemed impossible to get them in shape much before the middle of June. Great progress has been made in the Electricity Building. The entire floor is now covered with installed exhibits in various stages of completion, and a formal opening is to be made this week.

In Manufactures Building there are a great many boxes yet to be unpacked, but the entire exhibit is rapidly taking shape. The Russians have the frame work of their pavilion practically in place. The Norway pavilion is ready for the painters and decorators. Denmark will be prepared to receive visitors in a few days, and the Canadian exhibit is far advanced compared with what it was a week ago. Having completed the exterior decorations of their pavilion, the French are exerting themselves in the work of installing goods.

Most of the State pavilions in the Agricultural Building have been completed and in a majority of them the exhibits are in shape. Russia, Spain, Brazil and the Argentine Republic are considerably behind, but they have large forces of men employed, and are pushing the work. Washington, South Dakota, Kansas, Colorado, Utah and some other Western States expect to finish their exhibits this week.

In the Transportation Building the exhibits are more nearly completed than in any other department on the ground. During the week the French engines and cars were received and transferred to the tracks on which they will stand during the entire exposition, and the German pavilion, made at Berlin and brought here in sections, was put up. It is one of the most attractive in the building.

The first notable evidence of the fact that all the exhibits for the Mines and Mining Building have been received was noticed last week when workmen commenced to remove the railroad track. All the spaces are occupied with exhibits, but some of the pavilions are incomplete, and for that reason the goods remain unpacked.

The wine and fruit sections of the Horticultural Building show a vast improvement. Nearly every display in these two departments was installed last week.

The Wisconsin fish exhibit in the Fisheries Building was pushed forward and the exhibits will be installed this week.

Many of the State buildings have been thrown open to visitors. California is getting the various county exhibits in condition and the building is now an attractive place for visitors.

By the close of this week the fair will come out with flying colors.

Fighting the System of Awards.

The rebellion against the World's Fair system of awards is not confined to the commissioners of foreign countries. On Thursday last over 130 United States exhibitors in the Manufactures Building alone addressed to Director-General Davis a note which, it is ex-

pected, will be followed at an early day by the withdrawal of their exhibits from examination for awards.

This movement originated with John G. Low, president of the Low Art Tile Company of Chelsea, Mass., who have an extensive exhibit in the northwest corner of the building. He was speedily joined by S. D. K. North, secretary of the National Association of Wool Manufacturers and secretary also of the Special World's Fair Committee of Woolen Manufacturers of the United States, about 130 in number, who are exhibitors and who approve of his course. The other signers represent very important interests, whose exhibits are of the highest character as representations of skill and national technical progress. The matter has been well presented by Mr. North, who is quoted as follows:

"It may be that we are to blame for the misunderstanding, but the fact is that we came here with our exhibits for the express purpose of competing with other manufacturers and carrying off a prize for the best goods. The discovery that there is to be no competition, but only a medal and diploma for merit, without any hint at superiority or supremacy, disappoints and disgusts us. If we had known it we would never have sent an exhibit. It seems to me that Mr. Thatcher might just as well give us all a medal apiece now and let us go home; for anybody can get one, and it means nothing and is worth nothing.

"As the medals are no account it makes no difference in fact whether they are awarded fairly or unfairly, and yet, as a matter of principle, we object just as strenuously to the rules concerning awards. As I understand the rules there is to be a board of judges of about 500 members; these judges are to be divided into thirteen departmental committees; each committee is to subdivide its department among its individual members; each individual member is to award medals in the territory assigned him; and in case of injustice an appeal is to be, first to the departmental committee, then to the board of judges, and finally to the commission itself. Now, this is all bosh. In the first place no one man can be an expert in all the exhibits in his field. Suppose such an expert were assigned to woolens, we have 150 different lines, and no one man can be an expert in all of them. Supposing that he is a competent expert, still everything will depend on his integrity and his freedom from prejudice. If he does an exhibitor injustice the right of appeal is worthless. The exhibitors will not know what his decision is until the last moment. An appeal will involve a regular trial, with witnesses and some one to conduct it, and may consume months of time, and finally, if there should be many of these appeals, they could never be adjudicated in the world. The right of appeal, therefore, is worthless, and the system practically leaves every award to the judgment of one man.

"There is a comical side to this, too. I am told that there are 39,000 exhibitors and that Mr. Thacher has ordered 36,000 medals. It would seem from this that the poorest person and the poorest exhibitor will hardly be overlooked. But if any one is overlooked his complaint will be a very ludicrous one. He cannot complain that another exhibit was unfairly adjudged better than his; he can only appeal from the judgment of the expert that his exhibit had no merit worth noticing. All this is ridiculous."

Mr. Thacher makes the following explanation of the course of the Committee on Awards in adopting the system which is so much condemned:

"It is an American system and was adopted and used at the Centennial. Aside from the question of the merits of the two systems, the Congress of the United States has definitely decided that there can be no such thing as a competitive system, it having decreed by a legislative act which no foreign representative nor American exhibitor can very well change. It has decreed that there will be but one kind of medal and diploma, both being constructed under the direction of the Secretary of the Treasury. We could not, if we wished, now provide for gold, silver, or other kind of medals except the bronze. Therefore the competitive system, certainly as operated from graded awards, is impossible. This is not my system, but the American system, put into operation at Philadelphia, and forming the only precedent to which we have access. This system is going to stay, too. I do not say that in an offensive spirit, but I believe it is a good system capable of being operated satisfactorily to every one and to change it now would simply bring disaster upon the fair. The system, as it is, will not be changed and as far as the competitive system is concerned it could not be done. Section 3 of the act of Congress, approved March 3, provides that it shall not be a competitive system."

"Would not the system of awards, as it now is, result in the giving of medals to about every exhibitor at the fair?"

"Any exhibitor who has an excellent article will not be deprived of a medal."

Sunday Opening Wins.

By a vote of 29 to 28 the National Commission approved the rule adopted by the local directory providing for opening the fair on Sundays. This action was taken on May 23, very unexpectedly to those in favor of Sunday closing, who had been confidently counting on the commission arraying itself in opposition to the directory. The intervention of the United States having been appealed to, Attorney-General Olney has directed the local district attorney to make a test case in the United States Court for the district, and the question will be decided whether a portion of an act of Congress can be disregarded. The constitutionality of the provision will be an important phase in the legal fight.

Interesting Belgian Exhibits.

Nothing in the Belgian exhibit in Manufactures Building is more curious, interesting and beautiful than a group of bronzes placed near the main entrance. It comes from the foundry of the Société Anonyme at Brussels. The large pieces consist of a vase 8 feet high, a life-size statue of Leonidas at Thermopylæ, and a piece 5 feet high consisting of a beautiful female figure with three or four Cupids clambering over it called "Innocence Tormented by Love." The smaller pieces consist of wreaths of flowers of the most delicate and intricate molding imaginable.

The chief interest in these bronzes arises from the process by which they are made, called "the lost wax process," known to have been in use by the sculptors and foundries of antiquity, but long since and for many centuries lost and unknown. Of late years it has been, as is supposed, rediscovered, and is now in constant use at the foundry of the Société Anonyme. The process in ordinary use, called the sand process, gives better results in some kinds of castings; but where delicate outlines and shapes are desired nothing is comparable to the lost wax process.

Molding in wax is the most delicate and exact molding that is known and enables the artist to preserve every vine and flower and filament of vegetation, and every pore of the skin in a statue of the human body. The wax process consists of making a negative mold in cement from the wax figure, and then removing the wax by the application of heat. On the same principle runners through which the melted bronze is to be poured into the negative and vents through which hot air and vapors of the wax are to escape are provided. When the statue has been cast the negative is broken away from it, and the bronze casting is so perfect and minute that the slightest touch of the artist's finger on the wax model reappears faithfully in the bronze.

The exhibit of H. Pieper of Liége, is a young arsenal of everything in the way of small firearms that will kill man or beast. There are rifles, muskets, shotguns and pistols, and every conceivable size and style of each. The strangest feature of all is the different styles of guns made for the trade in half-civilized countries like Africa and Arabia. The natives of these countries have their own ideas of what constitutes a handsome and effective weapon and will have no other kind. The African races prefer a smooth-bore gun about 3 feet long, with a yellow or green stock, looking like a toy gun, and Mr. Pieper, rather than lose their trade, gets up a fascinating line of these bright-hued arms. Then the Arabians must have a gun 7 feet long, with a black or bright red stock running the whole length of the barrel. In the exhibit is a large lot of shotguns that will excite the envy of every sportsman that inspects them. They have one, two or three barrels, as one may choose. Some of the two-barreled and three barreled guns have one barrel rifled for a bullet and the other smooth for shot.

In connection with the shotguns there are exhibits that explain how the delicate tracery on these gun barrels is produced. Each gun barrel is made by wrapping a ribbon of metal around an iron rod and afterward welding its edges together. This ribbon is made of two, three or four small square rods, some of iron and some of steel, welded together. In some cases these small rods are twisted before welding, and twisted in different ways. When the gun barrel is made and polished it is then dipped in an acid, which eats the iron and steel unequally, and so produces all the wonderful tracery that is so much admired. This process is designed primarily, however, to produce greater strength, and the tracery is almost incidental.

The pistols in this collection are a particularly sad feature, as they are intended entirely for killing human beings, in time of peace, and are got up in such quantity and variety as show conclusively the widespread and growing popularity of this amusement.

The rope exhibit of F. Vermeire-Hellebout of Hamme is never passed unnoticed. Hung against the wall in perpendicular parallel lines are samples a few feet long of 50 sizes and kinds of rope, from a cord ¼ inch thick to a cable 6 inches in thickness and apparently as hard and inflexible as an oak tree. The admiration for the workmanship is increased by the fact that it is all entirely hand made.

One would suppose, from looking at it and feeling it, that the largest sample could never be twisted into its present form by anything less than the Allis quadruple expansion and condensing engine; and the statement that men have made such an article with their naked hands excites considerable astonishment. It is also claimed that hand-made ropes are double as strong as ropes made by machinery.

Mechanical Tests.

It is altogether probable that the series of mechanical tests contemplated in the report of the committee of the American Society of Mechanical Engineers to the Committee on Awards will be made. The question now before the World's Fair authorities is rather one of means and methods than of desirability. There is a disinclination on the parts of exposition officials to exact further fees from the exhibitors, yet rather than to let the great opportunity slip the exhibitors will be called upon. As to the importance of such a series of tests there is no difference of opinion. Exhibitors, engineers and World's Fair officials unite in saying that the tests should be made and made thoroughly by the most eminent experts.

Ten Thousand Mexicans Coming.

The St. Louis Spanish club is in receipt of advices from the Hathaway Excursion Company that they expect to bring in special excursions to the World's Fair over 10,000 Mexican visitors. Among them will be a large number of the leading merchants and professional and business men of Mexico. The first excursion will arrive at St. Louis about June 24, composed mainly of merchants of the city of Irapuato and vicinity. Governor Cosio of the State of Queretaro is expected to accompany this party.

Implement Exhibitors Organize.

The agricultural implement exhibitors at the exposition met at the Grand Pacific Hotel last week and effected a permanent organization to advance their interests at the fair and to meet once a week for the exchange of ideas. The following officers were elected: President, H. C. Staver, Chicago; secretary, R. I. Ardrey, Chicago; treasurer, A. D. Frary, Chicago; vice-presidents, James E. Deering, Illinois; J. D. Oliver, South Bend, Ind.; James Manning, New York; F. E. Myers, Ohio; Charles E. Whitman, St. Louis; Stephen Bull, Milwaukee; P. S. McGowan, St. Paul; W. D. Mitchell, Chattanooga, Tenn.; Mr. Mann, Louisville, Ky. The question of entering into a competition for awards without a field trial of the implements, contemplated by the Committee on Awards, was deferred until a future meeting.

The Ferris Wheel.

The Ferris wheel is a sure enough wheel now. The great felloes were joined together on Friday last and the work of lighting up was begun. Twenty-five of the 36 cars which will be suspended from the wheel have already been completed, and they will be swung into position this week. The engine is in place and the contractors expect to see the wheel in operation on June 10.

Number of Visitors.

Comparisons daily made with attendance on corresponding days at the Centennial show that the number of visitors is steadily over 50 per cent. larger. Arrangements have now been made for great electrical displays on Tuesday, Thursday and Saturday evening of each week, which are expected to prove very popular and greatly increase the gate receipts.

Wages in Boiler Shops of the United States.*

From sources we believe most reliable we have gathered the following data regarding wages paid men in boiler shops in the various sections of this country, and side by side the rate charged by manufacturers for same men. We have reduced all rates to per hour and not per day. One result of the convention in June, it is hoped, will be a greater uniformity than now exists. In Boston, Chicago, New Orleans and Pittsburgh only do the men work nine hours a day, in as well as out of the shop.

	Paid boiler makers per hour.	Paid helpers per hour.	Charged for boiler makers per hour.	Charged for helpers per hour.
	Cents.	Cents.	Cents.	Cents.
Boston, Mass.	25 to 27	20 to 22½	45	45
Baltimore, Md.	22½ to 30	15	35	20
Chicago, Ill.	27½ to 30	17½ to 20	40	40
Cleveland, Ohio.	25 to 27½	17½ to 20	35	35
Dayton, Ohio.	20 to 30	15 to 17½	40	30
Denver, Col.	32½	25	50	50
Erie, Pa.	24 to 27½	15 to 16	45	45
Harrisburg, Pa.	20 to 22½	13 to 14	40	30
Indianapolis, Ind.	25	15 to 17½	40	30
Kansas City, Mo.	25 to 27½	15	40 to 50	40
Milwaukee, Wis.		Same as	Chicago.	
New York, N. Y.	28 to 27½	17½	40	30
New Orleans, La.	25 to 20	15 to 20	50	35
Omaha, Neb.	27½	17½	40	40
Philadelphia, Pa.	20 to 25	15 to 17½	32 to 35	32 to 35
Pittsburgh, Pa.	25 to 35	17½ to 22	45 to 50	40 to 45
St. Paul or Minneapolis, Minn.	30	17½ to 22½	50	50
San Francisco, Cal.	25	20 to 25	50	35
Seattle, Wash.	35	20 to 22½	60	40
St. Louis, Mo.	25 to 27½	15 to 17½	50	50
Worcester, Mass.	25 to 27½	15 to 17	40 to 50	40

At Boston 25 cents to 27 cents per hour is paid riveters. Holders on, 18¼ cents to 20 cents; helpers, 15 cents to 17.50 cents; flange turners, 27.50 cents to 37½ cents; calkers, 25 cents. Forty cents per hour is charged for all hands on a repair job, including rivet heaters, and nine hours constitute a day's work.

In Chicago all labor on repairs is charged for at the rate of 45 cents per hour, and nine hours constitute a day's work.

In Cleveland 35 cents per hour is charged for each man on the job, including rivet boy.

In Indianapolis the standard wages for boiler makers is 25 cents per hour; helpers, 15 cents; helpers on the flange fire, 17½ cents; strikers on the snap, 20 cents per hour. There is no uniform rate for repairs. It varies from 40 to 50 cents for boiler makers and 25 to 40 cents for helpers. Time and a half for night work and double time for Sunday work.

New York union rates are:

	Per day.
Boiler makers, riveters and calkers	$2.60 to $2.75
Helpers	1.75
Heaters	1.25

Shop work and new work outside, ten hours a day's work. Old work outside on repairs, &c., nine hours to a day's work. Extra good men get more than above stated.

The charge made for repairs is as follows:

	Per day.
Boiler makers	$4.00
Helpers	3.00
Heaters	2.00

* From the *Boiler Maker*.

On outside work nine hours counts as a day's work, in the shop ten hours.

In New Orleans boiler makers are paid from 25 cents to 30 cents per hour for work in shop and 35 cents per hour for repair work outside. Helpers are paid 15 cents to 20 cents per hour. For repairs the charge is $4.50 per day, except steamboat and shop work, which is $5 and $5.50 per day. Helpers get $3 per day. Nine hours constitute a day's work.

From Philadelphia our correspondent writes us that they charge for boiler makers and helpers all around, 32 cents per hour in the shop and 35 cents per hour when away from the shop. The wages paid the other employees in their shop range as follows:

	Per week of 60 hours.
Fitters	$17.00 to $18.00
Riveters	14.00 to 15.00
Calkers	13.50 to .....
Flangers	18.00 to 21.00
Holders on	10.50 to 12.00
Helpers	9.00 to 10.00

Pittsburgh shops pay as follows:

	Per day.
Boiler makers	$2.25 to $3.00
Helpers	1.50 to 2.00

Above for nine hours' work.

In San Francisco the ordinary riveter, chipper and calker gets $3.50 per day; an all around flange turner, $4 to $5 per day; helpers, $2 to $2.50. The regular rate charged for repairs is 50 cents and 35 cents for boiler makers and helpers, respectively. Ten hours is a day's work. This rate is not lived up to, the competition in San Francisco being of an unfriendly nature.

On holidays, nights and Sundays boiler makers and helpers at Worcester, Mass., get double time, and wages rule about the same as Boston, Mass.

To improve the water front in New York City for commercial purposes, the latest proposition is to girdle the city with a four-track elevated railroad contiguous to the line of warehouses, and to compensate for the land thus taken by extending the piers 100 feet further into the river. It is argued that the cost of filling in the bulkheads and lengthening the piers would not be more than one-half of the value of the land acquired. On the other hand, encroachments on the channel have already damaged the harbor incalculably.

Western storms and tornadoes create an extraordinary demand for window glass. Local orders were received in Pittsburgh to the amount of at least $150,000 to replace windows broken recently

The Production of Iron Ore.

The United States States Geological Survey has issued in pamphlet form that part of the chapter on iron ore from the "Mineral Resources" for 1892 which relates to American statistics, John Birkinbine of Philadelphia being the statistician. A notable increase is again recorded, the total for the calen dar year 1892 being 16,296,666 gross tons, as compared with 14,518,041 gross tons in 1891. By States and territories and by kinds, the production of 1892 was as follows:

Production of Iron Ore, by Kinds, in Each State and Territory During the Calendar Year 1892.

States.	Red hematite.	Brown hematite.	Magnetite.	Carbonate.	Totals.	Total value of ore at mine.	Average value per ton of ore at mine.
	Long tons.	Long tons.	Long tons.	Long tons.	Long tons.		
Michigan	7,228,406	187,3 6	127,832	....	7,543,544	$16,587,521	$2.20
Alabama	1,657,028	655,043	.....	.....	2,312,071	2,442,57>	1.06
Minnesota	1,250,465	5,000	.....	.. ..	1,255,465	3,090,942	2.46
Pennsylvania	163,337	220,700	685,986	5,054	1,084,047	2,197,02>	2.03
New York	124,800	53,694	648,564	64,041	891,099	2,379,267	2.67
Wisconsin	774,879	15,300	.....	... ..	790,179	1,428,9:1	1.81
Virginia	26,120	711,753	3,154	.....	741,027	1,428,801*	1.91
New Jersey	4,348	4,348	456,759	....	465,455	1,388,875	2.98
Tennessee	256,786	149,792	.....	....	406,578	509,350	1.24
Georgia	30,832	154,219	.. ..	.....	185,054	262,517†	1.25
Colorado	1,412	124,317	16,040	.....	141,769	587,903	4.15
Missouri	114,032	4,462	.....	.....	118,494	237,827	2.01
Ohio	.....	... ...	.....	95,768	95,768	148,288	1.55
Kentucky	.....	43,254	.....	7,269	50,523	63,172	1.25
Massachusetts	.....	44,941	.....	.....	44,941	249,198‡	3.27
Maryland	.....	19,322	... .	20,849	40,171	88,891	2.21
Connecticut	.....	31,324	.....	.....	31,324	....	... .
North Carolina	....	....	25,379	.....	25,379	....	.....
Texas	...	22,853	50	.....	22,903	20,890	.91
New Mexico	7,000	... ..	8,201	.....	15,201		
Oregon	... .	11,503	.....	....	11,503	97,121	2 16
Utah	2,301	8,800	.....	.....	11,101		
Montana	4,900	2,170	.....	...	7,070		
West Virginia	.....	6,000	.....	....	6,000	.....	.....
Totals	11,646,619	2,485,101	1,971,965	192,981	16,296,666	$33,204,896	$2 04

* And West Virginia. † And North Carolina. ‡ And Connecticut.

Stocks.

The stocks of iron ore cannot be given with exactness, as in many instances the actual weight of ore is not determined until it is shipped, and the quantities in stock are necessarily estimated.

The following table shows the comparative stocks of iron ore held at the beginning and at the close of the year 1892 at the mines, but in addition to this there is considerable stock held by agents of the mining companies and at furnaces, as much of the Lake Superior ore is handled by vessels which, owing to ice, cannot travel in winter. There is also usually an accumulation of ore at receiving docks and at blast furnaces about the close of the year. Some of the States which show small stocks of ore supply blast furnaces practically direct from the mines, and little ore is kept in stock at either mine or furnace. In others a considerable portion of the ore mined must be stocked for shipment or held for the favorable season.

Stocks of Iron Ore on Hand on December 31, 1891 and 1892.

States.	Dec. 31, 1891. Long tons.	Dec. 31, 1892. Long tons.
Michigan	1,153,166	1,520,477
Alabama	64,864	47,018
Minnesota	160,084	247,063
Pennsylvania	31,851	62,124
New York	204,199	244,583
Wisconsin	211,869	251,949
Virginia and West Virginia	66,190	92,984
New Jersey	64,856	72,390
Tennessee	91,204	111,027
Georgia and N. Carolina	22,644	24,830
Colorado	5,580	4,200
Missouri	260,544	248,337
Ohio	51,948	60,013
Massachusetts and Connecticut	7,604	2,810
Kentucky	5,00	6,504
Maryland	8,500	8,000
Texas	12,793	18,103
Other States	23,883	19,529
Totals	2,450,279	3,032,531

The stock on hand at the mines at the close of 1891 represented 16.79 per cent. of the total output for the year, while the stock at the close of 1892 was equivalent to 18.61 per cent. of the total production in that year.

The total stock of ore on hand December 31, 1892, was 3,032,531 long tons, an increase over the stock on December 31, 1891 (2,450,279 tons), of 582,252 long tons, or 23 39 per cent.

While the condition of trade at the lower lake ports does not represent anything more than the status of Lake Superior ores, the important position which the mineral from that district holds to the country's total gives interest to statements concerning the stocks on hand. Outside of a few mines little ore is carried in stock, except at blast furnaces, and as the Lake Superior region last year contributed 58.69 per cent. of all the iron ore mined in the United States an approximate index of the condition of trade will appear from the following table:

Lake and Rail Shipments and Stocks of Ore on Hand at Close of Years 1889, 1890, 1891 and 1892.

Years.	Shipments.	Stock on hand at lake ports Dec. 1.
	Long tons.	Long tons.
1889	a7,390,387	a2,607,108
1890	b9,003,701	b3,293,487
1891	b7,094,981	b3,508, 89
1892	c9,073,568	c4,149,451

a Eleventh census. *b* Cleveland *Iron Trade Review*. *c* United States Geological Survey.

	Long tons.
There were on docks at lower lake ports, May 1, 1892	1,537,188
Receipts during season of 1892	6,660,734
Total	8,197,922
On dock at lower lake ports, Dec. 1, 1892	4,149,451
The shipments from Lake Erie docks to furnaces being in that period	4,048,471

Transportation.

The bulk of the iron ore from the Lake Superior region was forwarded to its destination via steam and sailing vessels on the great lakes, the all-rail shipments direct to blast furnaces in 1892, according to *Iron Ore*, amounting to but 525,768 long tons. One new shipping port appeared on the list—viz, Superior, Wis., from which 4245 tons of iron ore from the Mesaba range were forwarded. Nearly one-half of the lake shipments came from the port of Escanaba, Ashland being the nearest rival, and the importance of these two places as shippers of iron ore is well shown in the following table, taken from *Iron Ore* giving the amount of iron ore sent forward from each of the upper lake shipping ports:

Amounts of Iron Ore Sent Forward in the Shipping Season from the Various Lake Ports in 1892.

	Long tons.
Escanaba, Mich	4,012,197
Ashland, Wis	2,221,41
Two Harbors, Minn	1,155,498
Marquette, Mich	1,034,700
Gladstone, Mich	115,907
Superior, Wis	4,245
Total lake shipments	8,543,788
All-rail shipments	525,768
Total shipments of Lake Superior ores	9,069,556

The difference between these figures and those furnished to the United States Geological Survey—viz., 9,073,598 tons—is probably due to the variation between the actual weights and those represented by bills of lading.

Of the iron ore sent to the lower lake ports via Escanaba, 2,107,506 tons came from the mines on the Menominee range, 1,392,148 tons from the Marquette range, and 512,543 tons from the Gogebic range. All of the shipments from Ashland came from the Gogebic range, and those from Two Harbors from the Vermillion range. Gladstone's quota came from the Marquette and Menominee ranges, the former contributing 50,370 tons and the latter 65,537 tons. The small amount sent from Superior was the initial shipment of iron ore from the Mesaba range of Minnesota.

It is probable that both the ports of Two Harbors and Superior will show increased shipments in 1893, as the equipment of the former port has been enlarged and the latter built solely for the purpose of giving the needed facilities for forwarding the output of the Mesaba range.

Important Producers.

In order to produce iron ore at low cost and meet competition from other points, it is essential that the management should employ labor-saving devices and introduce economic methods: for this purpose in a number of cases several large mines are operated under one management, thus reducing the fixed charges per ton of product. By far the larger proportion of iron ore mined in the United States is obtained from a comparatively few of the more important mines, and in the year 1892, according to the returns made for this report, 10,883,677 long tons, or 66.78 per cent. of the total output, came from the 59 mines named, each of which contributed 50,000 long tons or over, and, if to this we add 12 other large mines for which permission to publish figures was not given, the aggregate will be 12,561,883 long tons, or 77.08 per cent. of the total, obtained from 71 mines.

In the table below will be found the names and the amount of iron ore mined in the year 1892 by such of the larger mining companies as expressed no objection to such publication; the balance, being held confidential, are not referred to by name, but the number of these mines and their output are included in the above statement.

List of Mines Producing 50,000 Tons or More of Iron Ore in 1892.

	Tons.	Long tons.
Norrie, Mich.	633,807	
East and North Norrie, Mich.	369,156	
		1,002,963
Chapin, Mich.		655,000
Chandler, Minn.		642,449
Cornwall, Pa.		634,714
Minnesota Iron Company, Minn.		568,771
Lake Superior, Mich.		444,506
Buffalo Mining Company, Mich.		387,347
Colby & Tilden, Mich.		385,816
Cleveland Iron Company, Mich.:		
Hard ore	90,190	
Lake	194,600	
Hematite	89,700	
		374,490
Penn Iron Mining Company, Mich.		337,713
Aurora, Mich.		289,966
Commonwealth, Wis.		271,585
Lake Angeline, Mich.		260,257
Ashland, Mich.		244,000
Winthrop & Mitchell, Mich.		191,658
Old Bed, Port Henry, N. Y.	95,862	
New Bed, Port Henry, N. Y.	95,471	
		191,333
Aragon, Mich.		181,107
Newport, Mich.		174,795
Republic, Mich.		167,213
Cliff Shafts, Mich.		159,783
Salisbury, Mich.		147,796
Dunn Mine, Mich.		142,454
Lady Ensley Coal, Iron & Railroad Company, Ala.		142,402
Sloss, Nos. 1 and 2, Ala.		140,946
Iron Belt, Wis.		140,535
Champion, Mich.		127,832
Pewabic, Mich.		125,831
Pabst, Mich. (a)		123,400
Irondale, Nos. 1, 2 and 3, Ala.		123,123
Brotherton, Mich.		116,723
Volunteer, Mich.		110,700
Great Western, Mich.		108,000
Cary and West Cary, Wis.		107,589
Palms, Mich.		107,243
Chateaugay, N. Y.		101,231
Inman, Tenn.		90,876
Jackson, Mich.		86,376
Negaunee, Mich.		85,567
Florence, Wis.		84,101
Graces Gap, Ala.		72,000
Tilly Foster, N. Y.		70,039
Shelby, Ala.		70,000
Sunday Lake, Mich.		68,618
Longdale, Va.		68,537
Shafer, Mich.		65,258
Hemlock River, Mich.		65,000
Montreal, Wis.		63,732
Clinton, N. Y.		63,345
Stephens, Ala.		62,400
Richard, N. J.		60,972
Hudson River, N. Y.		59,241
Roane Iron Company, Tenn.		57,910
Claire, Mich.		57,351
Sheridan, Mich.		51,000
Lower Wood, N. J.		50,683
Tannehill, Ala.		50,000
West Point, Tenn.		50,000
Total for 59 mines		10,883,677
Add for 12 other mines not mentioned by name		1,678,206
Total for 71 mines		12,561,883

a Operated in connection with Norrie mine.

The following table will show the number of mines in each State which in the year 1892 produced over 50,000 gross tons, the combined output of these mines, and the percentage of the total output of each of the States which came from these large mines:

Production of the Larger Iron Ore Mines, by States.

States.	Number of large mines.	Combined output.	Per cent. of total product of State.
Michigan	32	6,921,763	92
Alabama	14	2,036,008	88
Minnesota	2	1,211,220	96
Wisconsin	5	667,542	84
Pennsylvania	1	634,714	59
New York	7	583,387	65
Tennessee	3	198,786	49
New Jersey	3	163,926	35
Other States	2	143,537	.....
Total	71	12,561,883	*a*77

a Of total for United States.

Of these 71 mines, 50 were red hematite operations, giving a total output of 10,364,359 long tons, or 89 per cent. of the total of this class of ore; 10 were producers of magnetite, yielding 1,387,273 long tons, or 70 per cent. of the total output of this variety; 10 were brown hematite workings, with a total product of 751,010 long tons, or 30 per cent. of the total of this character of ore mined in the United States; the one remaining mine produced carbonate ore, its output of 59,241 tons being 31 per cent. of the nation's total of his class of ore.

From the above statement it can be seen that the average output of red hematite per mine of those producing over 50,000 long tons was 207,287 tons; of magnetite, 138,727 tons; of brown hematite, 75,101 tons, and of carbonate ore, 59,241 tons.

Imports.

While the United States has large deposits of iron ores of all kinds widely distributed throughout the various States and Territories, still the low rates of labor in foreign countries and cheap water transportation rates have admitted considerable quantities of iron ore into this country in spite of a specific duty of 75 cents per ton which is collected on all iron ore imported. In the year ending December 31, 1892, iron ore to the amount of 806,585 long tons, valued at $1,795,644, or $2.23 per ton, was thus imported.

All of this iron ore, however, is consumed near the ports of entry, and much of the ore entering the port of Baltimore is unloaded direct from the vessels to the blast furnace stock piles; this is also the case at one Pennsylvania furnace.

All the iron ore imported from Cuba is taken from the mines operated by American companies, as was that brought from Texada Island, in British Columbia. Until 1892 but one company was mining and shipping iron ore from Cuba, but last year a second enterprise was represented by actual shipments, and 1893 is expected to add at least one more active corporation to the list of Cuban mines. An American company is also about to exploit an iron ore deposit in Lower California, Mexico, and ship the product into the United States.

The Bureau of Statistics of the Treasury Department has kindly supplied the following table showing the amounts of iron ore imported from various foreign countries in the year ending December 31, 1892:

Quantity of Iron Ores Imported into the United States in the Calendar Years 1889, 1890, 1891 *and* 1892.

	1889. Quantity.	1890. Quantity.	1891. Quantity.	1892. Quantity.
	Long tons.	Long tons.	Long tons.	Long tons.
Spain	298,568	512,933	323,771	236,957
Cuba	243,255	341,814	257,189	307,115
French Africa and Oceanica	97,583	96,428	98,961	67,502
Italy	87,410	134,399	154,073	95,313
England	54,496	51,857	39,451	35,638
Greece	23,955	48,807	24,412	44,602
Newfoundland and Labrador	14,450	6,320	.....	.....
British Columbia	13,670	.....	588	2,749
Portugal	6,659	16,528	9,940	6,490
France	6,565	2,404	9	.....
Quebec, Ontario, Manitoba, and Northwest Territory	4,091	22,211	2,126	8,606
Turkey in Europe	.....	.....	3,859	3,346
Turkey in Asia	2,870	3,078	158	.....
Nova Scotia, New Brunswick, &c.	.....	.....	35	.....
Other countries	1	53	301	3,267
Totals	853,573	1,246,830	912,864	806,585

The major portion of the ore was received at the ports of Philadelphia and Baltimore, the percentage in 1891 and 1892 being almost identical—viz., over 95 per cent.

Copper Plating Ships' Bottoms.

James D. Darling of Frankford, Philadelphia, has been developing a method of electroplating the hulls of steel vessels with copper to keep them from fouling and to do away with the necessity for dry docking, scraping and repainting. He proposes to plate the bottom of iron and steel ships with a continuous sheet of copper that will be so firmly attached to the iron or steel that there will be no danger of its being torn off by accidental grounding on bars, &c., and that it will have no seams or joints to admit sea water and set up galvanic action.

The usual method of depositing copper electrically on iron or steel could not be used for this purpose, because the thick coat of copper required when thrown down from the ordinary sulphate solution would be very rough and uneven on the surface, more or less porous and entirely unfitted for the purpose. Mr. Darling has discovered a new method of depositing copper by which a perfectly smooth surface is obtained and by which a very dense and firm deposit is made. The White Star Steamship Company have been investigating it with a view to using it on their new ships, and it has also been submitted to the United States Navy. Arrangements are now being made to plate a small vessel, so that a practical trial may be given to the invention.

Canadian railway companies appear to be of the opinion that matrimony is a good thing. A Dominion journal states, as a fact not generally known, that when a settler in the northwest territories want to go back to Ontario to get married the Canadian Pacific Railway sells him a matrimonial ticket at the usual rate, and on presenting the return coupon and a marriage certificate he is entitled to free transportation for his bride.

The Miners' International Conference, in session in Brussels, adopted, on May 24, a resolution in favor of a universal eight-hour working day in mines. The supporters of the resolution represented 994,000 miners, and the opponents 100,000 miners. It was decided to enforce the eight-hour day by an international strike.

The Iron Age

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DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

A Bankers' Panic.

The severe curtailment of banking accommodations is unnecessarily intensifying commercial distress. Banks everywhere seem to have adopted the policy of refusing to discount paper except for their very best customers, and refusing to renew discounts except under very special circumstances. They are ostensibly fortifying themselves against possible sudden demands from their depositors, and for that rea son aim to accumulate a very large percentage of their deposits in actual cash. The legal reserve required by the national banking laws is now far below the limit that bankers are imposing upon themselves. It has become by no means unusual for a bank to have 50 per cent. of its deposits on hand in actual cash, and some bankers are striving to attain 66⅔ per cent. Taking the country as a whole, there has perhaps never been a time in its history when the banks held so much money in their vaults. Bankers may well claim that the banking institutions of the country are on a very solid basis. Having collected a very large part of the currency of the country, and securely locked it up, they are in an excellent position to claim financial strength.

This strength of the banks, however, is the weakness of manufacturing and commercial interests. The volume of business in general has not shrunk in proportion to the curtailment of banking accommodations. It is not possible for great business operations to suddenly shorten their lines, reduce expenses, discontinue purchasing supplies and stop making preparations for future business. They must go on with their plans for continuing trade on about the same scale, and in about the same way. Many large manufacturers are heavy borrowers at this season, especially those who depend to any great extent on agricultural interests. Later in the year they receive their returns on the outlay they have made and are then amply supplied with funds. Numerous business interests must conduct a genuine campaign, requiring a long period of elaborate and costly preparation, followed by a sharp conflict between salesmen, after which the fruits of victory are collected in the shape of payments by those who have bought the goods. There are trades in which nine months of preparation are necessary for but three months of active business. Manufacturers and merchants in such lines are handicapped by curtailments of banking privileges and their plans may be seriously disarranged. There are also plenty of business houses whose trade has outgrown their capital, but their management is superb and their solvency is never questioned. They must have banking accommodations, however, and when these are heavily curtailed, as at present, there will be embarrassment.

There appears to be a bankers' panic, caused by a few bank failures in various portions of the country, some failures in manufacturing and commercial circles, the great failures in Australia, and the general uneasiness concerning the silver question, together with growing financial stringency in all channels of trade. For the financial stringency the banks themselves seem to be largely responsible. By locking up the greater part of the circulating currency of a community, and sharply restricting credit, the banks of that locality may make themselves very strong, but they make the community itself very weak. Of what advantage is it to the country that the banks are able to report themselves immeasurably better equipped for a panic than ever before, if other business interests are without means to properly conduct their operations? An instance has been brought to our notice in which a bank that boasts of a reserve of 55 per cent. refused to discount a note for $10,000, drawn by a manufacturer of high standing and indorsed by a friend estimated to be worth at least a million dollars. The refusal was accompanied by the emphatic statement that the note would not be discounted if it was secured by ten times its face in Government bonds. This may be a very extreme case, but it illustrates the gravity of the situation from the standpoint of a panic-stricken banker.

Bankers are habitually asking their customers what is the condition of trade, and if the reply is unfavorable they mechanically ask the cause of the dullness or depression, and how soon there will probably be a change. The situation now is rapidly developing such a phase that the answer may soon be returned that the banks are causing the greatest trouble, and until bankers cultivate a fresh crop of confidence there will be no improvement. Caution and conservatism are most excellent qualities at this time, it is true, but there should be moderation and discrimination in the exercise of even such admirable qualities.

An interesting conversation in the presence of the writer recently occurred between an American bridge builder and a German engineer now traveling in this country. The peculiarities of American and foreign bridge building were first discussed and then naturally followed the commercial features of the trade. The German engineer stated that bridge builders in Germany paid 1.70 cents per pound or more for steel shapes delivered at their works, hired erectors at 75 cents per day and obtained 3½ cents for erected work. The American bridge builder said that he paid precisely the same price for material and received about the same, or lower, for erected work, but paid erectors three times as much, or $2.25 per day. The comparison thus made shows a remarkable state of affairs and leads to one of two conclusions: either that German bridge builders are doing a very profitable business, or American bridge builders are making no profit whatever. It certainly indicates that we have been making decided progress in getting down to a European basis.

Speculation and Exports.

Speculation in grain has wrought irreparable mischief, which the country feels very keenly at the present time. Most persistently artificial prices have been upheld, meanwhile restricting exports, until foreigners have found other sources of supply, and it is now vain to bewail lost opportunities. Not merely farmers suffer from bungling financiering, but the foreign commerce of the country is thrown out of equilibrium, so long as the disproportion of imports continues. An enormous amount of money remains on the other side of the Atlantic, which in the natural order of events would reduce in exactly the same proportion the millions of gold now going out in the settlement of indebtedness.

As this dislocation of trade has a direct effect on the United States Treasury reserves at a critical period, grain speculation is sure to be detrimental to the public interests in a most obvious sense. The conjunction of circumstances is the more noticeable pending the silver question and the grave problems of finance which are liable to be precipitated, and is all the more to be deprecated while mercantile credits are unsettled and distrust is excited.

Indeed, the moment is opportune to consider whether there has not been a gross miscalculation respecting the grain traffic, in more senses than one. In the first place, the fact gradually dawned upon the public that the wheat crop of last year was far in excess of the Government estimates. If not, the continued outpouring of wheat at interior points, the filling of warehouses and elevators on every line of railroad intersecting the wheat belt, was unaccountable. As an inevitable consequence prices were depressed, the enormous receipts at primary markets being the tiresome burden of complaint. But optimists were all the time sanguine that on the opening of navigation wheat would at once move forward to fill the channels of trade—to furnish cargoes for all available tonnage on the lakes, canals and ocean. The disappointment is bitter. Lake tonnage is comparatively unemployed, ocean freights are depressed as seldom before; wheat at Chicago this week sold at the lowest point, with one exception, for 30 years.

The fact is tolerably well ascertained that the wheat crop of 1892 was about 560,000,000 bushels, and that an amount fully equal to one-quarter of the entire yield was carried through the winter at heavy cost for interest and storage. Already the new crop is beginning to ripen in California and in Argentine, and Indian shipments to the United Kingdom will soon be in order. The situation is too obvious to be concealed. Receipts at Western points for 48 weeks amount to 257,000,000 bushels, against 232,000,000 bushels last year, the most prolific crop on record. Exports, on the other hand, are 34,000,000 bushels less.

A retrospective view ought to be instructive. Both as concerns agricultural prosperity and the interests of foreign trade—which are seen to be inseparable—the influence of speculation is pernicious, and there is no advantage in attempting a disguise of the unwelcome facts, whether as to the volume of the crop or the lethargy of the market in the face of prices the lowest ever known.

Chicago bar-iron manufacturers are endeavoring to secure lower freight rates to the Northwest to meet the competition of lake and rail rates from Ohio points to Minneapolis and St. Paul. Bar iron is being delivered at 12 cents per 100 from Mahoning Valley points and 10 cents per 100 from Cleveland, as against 20 cents by rail from Chicago. If the railroads do not make a rate more competitive it is proposed to establish a freight line via the iron-ore boats running between South Chicago and upper lake ports. Rail connections at low rates can then be made to consuming centers. The great lakes are every year becoming a more important factor in establishing freight rates throughout their contiguous territory.

The Manhattan Elevated Company of New York have been striving very hard to show that they will be unable to meet the conditions imposed by the Rapid Transit Commissioners in connection with the grant of franchises for elevated road extensions. They submitted an estimate of cost in which a total of $22,694,976 was reached. Mr. Starin, one of the commissioners, has rather roughly handled this estimate with a good deal of justice. He claims that the company's estimate is figured upon the cost of iron at 4 cents a pound. If that is the case, the financiers of the elevated road have not kept pace with developments during the past few years. It is true, as Mr. Starin states, that elevated work in Chicago has been contracted for during the last year at 3 cents erected, and it is equally true that similar work for Brooklyn was secured by an Eastern mill at 2.85 cents erected. While it may be doubted whether that price allowed the builder to come out whole, it is pretty certain that any good concern would gladly take simple elevated structure at 3 cents erected, and that 2.90 cents might be done. Such palpable methods to mislead the public are hardly likely to decrease the exasperation which is felt against the elevated railroads.

OBITUARY.

JAMES NEILSON.

James Neilson, vice-president of the Andrews Brothers Company, proprietors of the Haselton Iron Works and Haselton Furnace, both at Youngstown, Ohio, died at his residence in that city on Thursday evening, the 25th ult. About six weeks ago Mr. Neilson went on a Western business trip, where he contracted the grip, which was followed by congestion of the lungs. He returned home and was confined to his bed for several weeks, and feeling considerably better he again resumed active work. About two weeks ago he again started on a Western trip, but when he reached Chicago he was in such a weakened condition that he returned home. He again took to his bed and grew rapidly worse until death came. James Neilson was born in Glasgow, Scotland, and was 53 years of age. He received a common school education, and emigrated to America when he was 21 years of age. He first went to Canada, and from there to the States, and settled at Haselton, where he was given the position of weighmaster at the old Powers coal mine in 1865. In 1866 the mines were leased by Andrews Bros. & Co., who in the following year begun the erection of their blast furnace. The firm saw that Mr. Neilson was capable and accurate, and they placed him in charge of their books. He continued in charge of the office work until 1876, when he assumed the management of the furnaces, and he has given that department his personal attention ever since. In 1880 he became a member of the firm of Andrews Bros. & Co. In 1887, at the organization of the firm of the Andrews Brothers Company, he was elected vice-president and general manager of their whole extensive iron plant, and he has continued in that position ever since.

In 1889 Mr. Neilson organized the Youngstown Bridge Company, and was made their president. He also organized and was president of the Mahoning Ore Company, operating mines in Minnesota. He was a stockholder and director in the Youngstown Car Mfg. Company, and besides held stock in the Morris Hardware Company, the G. M. McKelvey Company, the Dollar Savings & Trust Company and the Ohio Steel Company.

PROF. MOSES G. FARMER.

Prof. Moses G. Farmer, an electrician of international reputation, died of pneumonia on the 25th ult., at Chicago. Professor Farmer was 73 years old and for some time past had been in feeble health. Against the advice of his physicians he left his home in Boston early last October and went to Chicago, strongly desiring to see at the Columbian Exposition the triumphs of the science he had made his life study. He came from Puritan stock and was born February 9, 1820. At college he gave most of his attention to the study of chemistry, and when the science of electricity first attracted attention he began experimenting with it, and was one of the first electricians to put it to practical and industrial uses. He constructed a motor capable of making a car go, which was the parent of the first electric railway motor known. One of Professor Farmer's many applications of electricity to practical usages was the fire alarm telegram, with which he equipped the city of Boston. From his inventions he derived a large royalty. He was the first to put in operation and solve the problem of multiple transmission by telegraph, which he did in 1862. When the Department of Electricity was established at the United States Naval Torpedo Station Professor Farmer took charge of the station, and in that capacity remained at Newport, R. I., for many years. The interment was at Eliot, Maine.

Southern Freights.

The East Tennessee, Virginia & Georgia Railway have issued Supplement No. 4 to Tariff No. 28, applying on pig iron in carloads of 17½ tons minimum, from Southern furnaces to points north, east and west, to take effect June 1. The rates between some of the more important points are as follows:

To	From— Chattanooga.	Birmingham.	Sheffield and Florence.
Allentown, Pa	$5.03	$5.28	$5.38
Altoona, Pa	5.43	5.68	5.78
Bethlehem, Pa	5.28	5.53	5.63
Birdsboro, Pa	4.62	4.87	4.97
Blandon, Pa	4.65	4.90	5.00
Catasauqua, Pa	5.03	5.28	5.38
Coatesville, Pa	4.62	4.87	4.97
Columbia, Lancaster County, Pa	4.32	4.57	4.67
Conshohocken, Pa	4.62	4.87	4.97
Duncansville, Pa	5.43	5.68	5.78
Easton, Pa	5.28	5.53	5.63
Fullerton, Pa	5.03	5.28	5.38
Glasgow, Pa	4.62	4.87	4.97
Harrisburg, Pa	3.88	4.13	4.23
Lebanon, Pa	4.22	4.47	4.57
Leesport, Pa	4.65	4.90	5.00
Lewistown, Pa	5.43	5.68	5.78
Millville, N. J	5.08	5.33	5.43
Pencoyd, Pa	4.62	4.87	4.97
Phillipsburg, N. J	5.28	5.53	5.63
Pottstown, Pa	4.62	4.87	4.97
Pottsville, Pa	4.67	4.92	5.02
Scranton, Pa	5.43	5.68	5.78
Steelton, Pa	4.16	4.41	4.51
Trenton, N. J	4.92	5.17	5.27
Wrightsville, Pa	4.32	4.57	4.67

The above are a number of the interior Pennsylvania and New Jersey points which have been affected principally by the increase on arbitraries on Southern pig iron.

The official statistics of the foreign trade of Spain show a steady falling off in both exports and imports. The following table for the past three years, published by the Spanish Board of Trade, shows the tendency toward decrease:

	1892.	1891.	1890.
Imports	$144,699,145	167,776,032	155,550,648
Exports	140,065,186	154,232,427	158,370,302

The falling off of $23,000,000 in imports was largely under the head of "special imports," which includes railway material, agricultural machinery, tobacco and specie. As regards exports, the decrease was mainly due to the falling off in shipments of wine owing to the rise in French duties.

The beautiful electrical effects displayed on board the British ships during their late visit to New York have given some new ideas as to the possibilities afforded by the electric light for brilliant spectacles on the water. Such decorations will probably form a striking part of naval displays in future.

San Francisco Notes.

The great question before our iron and hardware men, as well as before merchants in other lines of trade, is today that of freight rates and how to get them cheapest. Before the railroads bridged the Rockies all was plain sailing with the San Francisco merchant. No matter what was wanted, from a needle to an anchor, it had to be purchased here, and every merchant from Alaska to Panama and from Honolulu to the peaks of the Rockies had to send or make his annual or semi-annual trip to the Golden City in order to lay in his stock of goods, but for a score of years that has no longer been so, and now, alas! the San Francisco merchant has to hunt up the customer, who no longer seeks him, as of old. Not only that, but he finds that he is restricted to but a tithe of his former territory, and he has to fight for life even within the limits of that. The shipment of iron and hardware to English ports and the reshipment here was the first indication on the part of San Francisco merchants of a wish to escape from the toils. Then came the formation of the Traffic Association to fight the railroad, first by clippers, then by steamers. One of the leading spirits of this was L. L. Baker of the hardware house of Baker & Hamilton. The arrival of the first ship round the Horn was the occasion of a grand celebration, in which Mr. Baker was one of the principal participants. The inauguration of the North American Steamship Company was also largely the work of the hardwaremen, and since the first steamer has sailed the cutting of rates, both by rail and sea, has been something unparalleled. The railroad became desperate, and has cut down rates to a lower figure than ever before known. The Pacific Mail Company, through losing the right of shipment by the Panama Railroad, have become confined to a coasting business with Mexico and Central America. This left the field via Panama altogether to the North American Steamship Company. Huntington, it is said, has obtained the right again from the Panama road, and, though our friends of the North American Steamship Company affect not to believe it, it is giving them a good deal of uneasiness. If such a thing should happen it would, of course, confine the operations of the Traffic Association very materially. In fact, it would be a great blow to them for a while at least. They would for some time have to depend altogether on the clipper lines.

It is true that there could not be an appreciable advance in railroad freights, as the Canadian Pacific has entered the field with a schedule of very low rates, which, of course, the Southern Pacific has to parallel. This latter organization has been compelled to reduce rates in another direction. The Oregon Pacific, which has a line reaching from Yaquina to the Willamette Valley, has made rates low enough to bring all the hardware and metal trade its way—that is, by steamer from San Francisco and then by rail into the valley. It has also put a steamer on the Willamette. This is calculated to divert the trade of the Northern Pacific and also that of the Southern Pacific's branch line to Portland and to concentrate it all in San Francisco. It, too, cuts off Portland from the valley. The Southern Pacific has taken the alarm and has made one of the lowest rates on record from San Francisco to all points in the Willamette Valley. The Oregon Pacific has made another cut and so the work goes on. Either way, this will give about all there is of the hardware and metal trade of Southern and Central Oregon to our hardware houses. They used to have all there was of the Oregon trade and now see a chance of getting a good slice of it, because since they lost it it has increased many fold.

All things thus point to a good fall business for these special lines as well as others, and matters have been tolerably brisk for a week or two, but it would be a departure from the strict line of veracity to say that business has been prosperous of late, for it has not. There has been a great deal of work done during the past six months which will have results in the near future, but it has not materialized to date. The markets have been, as a whole, notable for their quietude.

New Publications.

THE MINERAL INDUSTRY: ITS STATISTICS, TECHNOLOGY AND TRADE FOR 1892. Edited by R. P. Rothwell. Published by the Scientific Publishing Company, New York.

With one of those curious spells of self-glorification of which the publishers of this work are occasionally guilty, they have placed before the public a volume which is a remarkable exhibition of the appropriation of the work of others. The statistical data gathered by the American Iron and Steel Association, by the United States Geological Survey, the Census Office, the Bureau of Statistics and the Mint, are spread out in imposing array. Credit is given in some instances with a patronizing air of superior statistical authority which is staggering, in view of the criminal past and present blunders. We cannot discover that in the leading mineral industries any original work has been done outside of lead, copper and zinc. In regard to copper the figures are out of the way, so far as the Lake Superior district is concerned, to the extent of over 14,500,000 pounds in a correct total of nearly 122,000,000 pounds. In spelter the error is nearly 4000 tons. In the other leading industries there is either no original work, as in iron ore and in coke, or there are put on record what are euphoniously termed "estimates."

So far as iron and steel are concerned the work is worse than valueless, because the statistics presented are wrong and conflicting. They illustrate in an amazing manner the slipshod statistical method and the barefaced assumption of authority in guessing at production. At the time when the volume was compiled or revised Mr. Swank's statistics of the production of pig iron and of Bessemer steel and rails were evidently available. His figures for the production of pig iron are used in a table printed on page 281, and yet an altogether different set of figures is placed before the readers on page 278. The production of Bessemer steel rails is correctly given on page 290 as 1,458,743 gross tons, and yet on page 292 the same item is tabulated as estimated at 1,285,000 tons. A striking example of the knowledge of the great statistician who has so suddenly burst upon the steel trade is furnished by his estimate of the production of rolled iron and steel, exclusive of rails. He makes it 4,050,000 tons, or a little less than the preceding year, when the actual fact was that there was an astounding increase to 4,613,970 tons. The production of open hearth steel is placed at 600,000 tons, when it was 669,889 tons, and that of crucible steel at 75,000 tons, when it reached 84,709 tons. The only contribution of value in the whole work to the ironmaster is the table showing the cost of production at the Thomas Iron Company, which we reproduced last week. None of the explanations which any one who studies it would at once call for are given.

We are given to understand that data relating to cost of production are a great feature of the work. Aside from the figures copied from Wright's report, now so old as to be nearly valueless, and the copper costs relating to Lake Superior, which have been public property for many years, we find only very few and insignificant details. The reviews of the markets are on a par with the weekly reports emanating from the same source.

THE YOSEMITE, ALASKA AND THE YELLOWSTONE. By William H. Wiley and Sara King Wiley. Reprinted from *Engineering*, London: Offices of *Engineering*, 35 and 36 Bedford street, Strand, W. C. New York: John Wiley & Sons, 53 East Tenth street. $3.

The party from New York and the East who participated in the trip of the American Society of Mechanical Engineers to their San Francisco convention in the spring of 1892 included among their numbers two persons who possessed an unusual faculty for observation and the inclination and ability to put the results of such observation into the form of a most interesting volume of travel. "The Yosemite, Alaska and the Yellowstone," by William H. and Sara King Wiley, will go far to make the trip of the Eastern engineers historical. The volume before us is a reprint of a series of articles contributed to *Engineering* in which the authors have recorded their impressions of a journey of great interest through some of the wildest and most beautiful parts of the wide Western land. It is a sumptuous book, well arranged, well printed, well illustrated and well bound. In addition to these recommendations it is written throughout in a fresh and breezy style which holds the interest of the reader and makes even the occasional statistics and details of description entirely readable to every one. In short, it is a book of travel such as it is a pleasure to peruse, even in these days which see this class of literature falling from the press "thick as leaves in Volombrossa." From an artistic standpoint, too, the book is an excellent one. The illustrations, numbering 157, with which it is enriched are of a high class. The authors carry one in imagination through their long journey of 10,000 miles, covered in the short space of two months, and show in graphic word pictures as well as by more direct illustrations the various interesting and beautiful sights observed on the trip. The ground traversed includes California, Colorado, Salt Lake City, Nevada, Oregon, Washington State and Puget Sound, Alaska, Montana, and other places of interest. Full descriptions of the scenery and other natural features of the Yosemite and the famed Yellowstone Park are given, together with some exquisite views of these national show places; and the account of the less known territory of Alaska is of special interest. The volume is dedicated to James Dredge, the editor of *Engineering*, who furnishes it with a preface, giving a short history of the principal regions mentioned in the work.

THE WEEK.

The discovery of a rich petroleum field is reported in Assam, East Indies. A company under the title of the Assam Oil Syndicate, is about to open up the oil resources of that region, which are said to be very promising.

The Argentine Government have ordered from England a floating dry-dock for the use of the Argentine navy.

The directors of the Manchester Ship Canal announce that it will be open for traffic in January next.

According to a report by United States Consul Loomis of St. Etienne, there were 1813 strikes in France during the 38 years from 1852 to 1889, of which only 163 resulted in favor of the workmen.

The fiber of banana stalks is proposed as a substitute for jute in the manufacture of wrapping paper. The commercial possibilities of such an industry are being seriously considered in Nicaragua in view of the partial failure of the East Indian jute crop.

It is said that the telephone system is interfering with railroad travel, as boards of directors and others in business can talk to each other from a distance without the necessity of being visibly present.

Boston, New York and Philadelphia are all agitated by rapid transit schemes, but the subject is perplexing and is slow in development. The latest plan under discussion in Boston involves an estimated expenditure of $25,000,000.

Export statistics from the bureau at Washington shows that there is a comparative increase in the foreign demand for Indian corn. It is important that Europe should know the value of corn as a food product.

The California wheat crop is nearly ready to harvest and will be about 1,000,000 tons.

It is a misfortune that the Bureau of Naval Intelligence is compelled to discontinue for the present its publication describing the progress of naval work because so many officers who do the work of compilation are detailed for duty at the Chicago exhibition.

The machinists and most of the other labor unions in Boston are endeavoring to introduce a nine-hour day, June 5.

After all that has been said about freight transportation between New York and Panama, nothing definite has been settled in the attempt to harmonize the relations between the old companies.

Plans for introducing electric propulsion on the New York canals are gradually maturing. Governor Flower says experiments will soon be made upon the Rochester and Schenectady levels of the Erie to test a number of devices of this description. He is assured that the object can be successfully accomplished. It will cost between 50 and 60 cents a day to propel a boat by electricity, while horse-power now costs $2 a day, so that electric power will effect a large saving in money as well as in time.

A gigantic scheme for a railroad from North Dakota to the Gulf of Mexico is being agitated by the Populists in the Northwest, and next month a convention composed of delegates representing the two Dakotas, Nebraska, Kansas, Oklahoma and Texas will be held to consider the subject. Farmers, it is claimed, will have an opportunity to get their produce to foreign markets at a great reduction over the present rates, and establish a reciprocity of trade between this country and South America of special advantage to the agricultural classes.

Sugar cane promises an unusually large crop and the yield will be greater on account of the more general introduction of improved machinery under the encouragement of the county system.

The five new steamships building by the Cramps for the American Line to England will have the necessary power to make them compare well, so their builders remark, with the naval cruiser "New York," just completed in the same yard.

As foreseen, the issues of silver certificates are steadily forcing out of circulation other forms of currency, and are now in such excess and are returned to the Treasury with such regularity that their issue is practically suspended. Custom House receipts to the extent of 40 per cent. are of this description, whereas before the passage of the Sherman law from 75 to 95 per cent. were gold certificates, which at the present time are withheld altogether. So marked has become the tendency to unload silver certificates upon the Government, while hoarding better forms of money, that packages of large certificates have been sent back unbroken within a week or ten days in payment for customs dues by banks which received them in the West.

Not long ago the Canadian Pacific line shortened the time between London and Hong Kong to 21 days, and now the P. & O. steamers have cut down their record from 26 to 24 days between the same points. Still the Dominion route is one-eighth better.

The blue book issued by Canada's Minister of Finance, after speaking of the loss of trade with the United States since the abrogation of the reciprocity treaty in 1866, refers to a standing offer on the statute books, "to make free or reduce the duties on certain named articles in case of equivalent reduction on the part of the United States," and intimates that overtures would be gladly renewed, but that an interchange of manufactured goods on a tariff basis involving discrimination against Great Britain is impracticable. On this last point all conferences held at Washington hitherto have split.

England, like the United States, suffers from the lessened purchases of manufactured cotton by China.

Fifty Oregon merchants are in San Francisco to encourage coastwise trade and two more steamers will be put on between that city and Yaquina next autumn.

The experience of recent fast steamers at Queenstown shows that merchants in New York can post letters to London and receive replies thereto within the extraordinary time of 14 days. Liverpool papers still claim the superiority of Queenstown as a mail station compared with any other port.

Secretary Herbert makes a radical departure in deciding that two of the three small gunboats ordered by Congress shall be of the composite type. That means that the frames of the vessels and part of the structure above the water line be made of steel, but that the hull be covered with wood planking. This wood planking in turn will be sheathed with copper, and thus the vessels will be enabled to make long cruises in tropical waters without going through the expensive process of docking and scraping. This plan has long been urged upon the Bureau of Construction.

Cleveland architects are perfecting their plans for the manual training school building, which will be a handsome structure, with a stone front 100 feet wide.

It is officially reported from the computations by naval engineers that the cruiser "New York" on her trial trip made 21 knots, allowing for tidal currents.

MANUFACTURING.

Iron and Steel.

Recently an angle measuring 19 feet in length and 14 x 3½ inches was rolled in the 23-inch mill of the Pottsville Iron & Steel Company, Pottsville, Pa. This was made on the roll designed by Bernard Schlitzer. The mill will commence the manufacture of angles up to 54 feet long.

Premature reports are in circulation that the Washburn & Moen Mfg. Company are preparing to double their plant at Waukegan, Ill., intending to manufacture their own steel and copper. The plans of the company contemplate departments of this character, but no steps have been taken as yet toward erecting works. It may be some time before anything is done in the way of enlargement, especially if trade should continue depressed.

A Halifax (N. S) special says: F. C. Pearson of the West End Railway system is reported to be at the head of a syndicate of Boston capitalists who have purchased the blast furnaces and iron mines at Ferrona and the forge and steel works at New Glasgow. They propose to revolutionize the iron industry of Nova Scotia and to place themselves in a position to supply the New England markets with pig iron in case the United States duty is removed or lowered, or with iron ore in case the duty on the manufactured article is retained and that on raw materials is removed.

The new bar mill now being built by the Brown-Bonnell Iron Company, Youngstown, Ohio, is almost completed, and will be ready for operations within the next week or ten days.

The United States Iron & Tin Plate Mfg. Company, manufacturers of tin and terne plates, are making some changes in their boiler equipment, and also in the method of placing them, which is expected to effect a considerable saving in fuel.

The Ohio Iron & Steel Company of Youngstown, Ohio, have awarded the contract for one of their buildings to the Youngstown Bridge Company and another to the Pittsburgh Bridge Company, and both structures will be of steel. Within a few weeks this concern have awarded contracts to the amount of $400,000, and over 75 per cent. of the machinery and equipment have been ordered.

As announced in these columns some time since, the Tyler Tube & Pipe Company, manufacturers of charcoal iron and special steel boiler tubes, are doubling the size of their present tube-mill plant, and have contracted with the S. R. Smythe Company, engineers and contractors, of Pittsburgh, for one of their latest regenerative gas furnaces, which is to be 28 feet long and 13 feet wide. When the new furnace is completed the firm will have a capacity for turning out nearly 100 tons of finished boiler tubes per day. When the additions to buildings, which are to be of iron, are completed, the tube mill will be 330 feet long and 130 feet wide. The S. R. Smythe Company have also a contract for another bending furnace, to be built with all the latest improvements. The steam plant will be furnished by another battery of Babcock & Wilcox water-tube safety boilers, furnished through the Pittsburgh office of that concern. The reversing engine for the tube-mill department is being made by the Skinner Engine Company of Erie, Pa., and the Indiana Bridge Company of Muncie, Ind., have the contract for the

iron buildings. The fire brick in the new furnaces are being furnished by R. B. Wigton & Sons of Philadelphia, and the common brick by the John Porter Company of New Cumberland, W. Va. The new mill will make boiler tubes up to 12 inches in diameter. This concern manufacture all their own charcoal iron blooms, using nothing but charcoal and natural gas, having their own rolling mill and everything complete.

At Pittsburgh last week a bill in equity was filed by the Oliver Iron & Steel Company against the Monongahela Water Company. It is alleged that in 1887 an agreement was made to furnish the plaintiffs' works on the South Side with water at the rate of $1913 per year. The agreement was to run 20 years. The water company now want to charge $3405 for water for the past year and threaten if it is not paid to shut off the water from the plaintiffs' works. This, it is alleged, would cause damage and throw 1000 persons out of employment. The court was asked to grant an injunction restraining them from stopping the supply of water and to determine the amount they should pay.

The Andrews Brothers Company, operating the Haselton Iron Works, at Haselton, Ohio, advise us that their rolling mills will close down on June 30 for regular annual repairs and also for the purpose of adjusting the wage scale for the coming year. This shut down may extend through the month of July and possibly later. The concern state that they are entirely sold up on iron and steel sheets to June 30, and only solicit inquiries for bars and bands in either iron or steel.

The furnace of the Norristown Iron Works, at Norristown, Pa., has resumed operations.

The Cumberland Nail & Iron Company of Bridgeton, N. J., have posted notices announcing a general reduction in wages.

The Philadelphia Bridge Works of Pottstown, Pa., have shipped to the Pennsylvania Railroad Company, at Philadelphia, a girder 58 feet long and 11 feet high. It will be used to span Fifteenth street in the new Broad street station. The special car built for conveying the Krupp gun from Sparrow's Point, Md., to Chicago was employed in carrying the girder, which weighs 110,000 pounds.

The Pioneer Furnace, owned by the Cleveland Cliffs Company, at Negaunee, Mich., has closed down, it is said permanently. It had been in operation for 41 years. The closing down of this furnace will leave only one charcoal furnace of 19 in the upper peninsula in blast.

The Gatling Ordnance Company of Buffalo, N. Y., have contracted with William Swindell & Bros. of Pittsburgh, for a 30-ton open-hearth steel-melting furnace to cost $5779; a 15-ton open-hearth steel furnace, to cost $4385, and six improved gas producers, to cost $3237.

No. 1 Sheridan Furnace at Lebanon, Pa., has blown out for repairs. It it stated that the stack will be enlarged and practically rebuilt.

David Snyder of Myerstown, Pa., has just finished lining furnace stacks at Topton and Birdsboro, and is now relining a furnace at Bloomsburg, Pa.

W F. Smalley, a large stockholder in the Piedmont Land & Improvement Company at Piedmont, Ala., is arranging to complete the furnace at that point commenced about two years ago.

After having been in blast continuously since October 7, 1891, the Salem Furnace at Salem, Va., has closed down for repairs. The best day's run was that of 160 tons on March 21, 1893, and the best week's work was that of 1114 tons for the week ending March 25, in this year. The West End Furnace, between Roanoke and Salem, has also closed down for repairs.

It is stated that the Dayton Coal & Iron Company, Dayton, Tenn., have struck a vein of coal over 4 feet thick in their new mine, and it is thought they will start up their other furnace, which has been out of blast for a year.

The first shipment of iron by water from Florence, Ala., was made last week when the Philadelphia Furnace shipped 100 tons to St. Louis and Louisville by a steamer. It is now thought that the low rates given by water will cause the majority of iron to be shipped in this way in future.

Machinery.

On Sunday evening, May 21, the factory of the Diamond Machine Company, Providence, R. I., was entirely destroyed by fire. Nearly all of the patterns, however, of regular grinding and polishing machinery were saved Temporary arrangements have been made by which the majority of the regular machines will be shipped in from two to three weeks. The company will start immediately to erect a fire-proof brick factory, which, when completed, will be equipped with the latest and most improved machinery, and of more than double the former capacity.

The J. A. Fay & Egan Company of Cincinnati, Ohio, have just received a large order for wood-working machinery to go to Padang, Sumatra, Dutch East India.

J. H. Williams & Co., 9 to 15 Richards street, Brooklyn, N. Y., are making some improvements in their drop forging works in order to increase their storage and shipping facilities. Some adjoining house property has been acquired, a portion of which will be altered and adapted for use as a shipping department, the upper floors being utilized for storage purposes. This will relieve the main floor of the factory which has hitherto been used in this way, and afford room for the placing there of additional machinery. A new room has been built on the second floor of the main building to be used as a sample room, where samples of the various lines of drop forgings made by the firm will be displayed. A large and increasing business is being done by the company which taxes their large resources to the utmost.

The Hydraulic Machine Company of Pittsburgh are adding a new foundry to their plant, which measures 106 x 170 feet, and which will be equipped with a 20-ton electric crane. This firm have recently made shipments of hydraulic ingot extractors to the Cleveland Rolling Mill Company, Cleveland, Ohio, and to the Joliet works of the Illinois Steel Company.

Suit for a preliminary injunction to restraint the Pierpoint Boiler company, Pittsburgh, from building a certain style of water-tube boilers, brought by the Stirling Company of Chicago, claiming infringement, has been withdrawn by the complainants.

The Robinson-Rea Mfg. Company of Pittsburgh will equip their new foundry, now under construction, with two large electric traveling cranes built by Wm. Sellers & Co., Incorporated, of Philadelphia. Each of these cranes has a span of 80 feet, one being of 30 tons capacity and the other 80 tons. The cranes are provided with a double trolley, a distinctive feature which enables the cranes to be engaged on two separate pieces of work at the same time, or both trolleys can be used together, an excellent feature where heavy work is done.

The Ewart Mfg. Company of Indianapolis, Ind., manufacturers of iron links, belting and chains, find that their business is outgrowing their present works, and have purchased additional land on which they will build a structure 200 x 100 feet in size, three stories high.

A building permit has been granted to the Cleveland Steel Casting Company of Cleveland, Ohio, to build an iron and steel foundry to cost $9000.

The National Malleable Iron Works have completed their new buildings at Indianapolis, Ind., and 12 of the 15 acres owned by the company are now covered with one and two story buildings. Within the last six months the company have put up three additional buildings, one 168 x 95 feet, two stories high; another 100 x 100 feet, one story high, and a third 331 x 107 feet, also one story high. The company employ 817 men.

The new building of the Akron Boiler Works, at Akron, Ohio, has been blown down by a wind storm and the structure completely wrecked. The building was 235 x 53 feet in size.

The Merrill-Stevens Engineering Company of Jacksonville, Fla., are arranging to make extensive additions to their plant.

Peter Douglas has commenced the construction of a new foundry at Dartmouth, N. S. Two buildings will be erected, a foundry 100 x 30 feet, and a machine shop 60 x 25 feet.

Papers have been served on the Springfield Emery Wheel Company of Bridgeport, Conn., in a notice of a suit for the foreclosure of a mortgage on their property held by the P. T. Barnum estate, the amount involved being $38,000, with interest from April, 1891. It is stated that the affairs of the company have been in an unsatisfactory condition for some time past, and that differences have existed in the management which threatened to disrupt the company. The Barnum estate announce that they will foreclose at once, and the company say they are powerless unless a compromise can be effected. It is said that the difficulty may result in the removal of the concern from Bridgeport.

W. L. Simpson of the Keystone Engine & Machine Works, Philadelphia, has been appointed agent for the sale of Barclay's automatic safety governor stop for Corliss engines for the States of New York, New Jersey, Eastern Pennsylvania and Delaware.

The Black Hills Foundry & Machine Shops have begun operations at Deadwood, S. D.

The Crescent Foundry & Construction Company, recently organized at Pittsburgh, have purchased the plant of the Crescent Foundry Company, Allegheny, Pa., formerly operated by L. Wertheimer. The plant has been generally overhauled and put in first-class condition and is now in full operation, giving employment to a large force of men. The new concern will make a specialty of blast furnace and rolling mill work and in addition expect to do considerable railroad work, having received orders for castings from the Pittsburgh & Western Railroad and the Pittsburgh, Allegheny & Manchester Traction Company. The officials of the concern are D. R. Lean, chairman; R. B. Lean, treasurer, and N. A. Didier, secretary and general manager. The main office is located at the works, with branch office in Penn Building, Pittsburgh.

The Enterprise Boiler Company, Youngstown, Ohio, are working on three fire-brick stoves for McClure, Amsler & Co. of Pittsburgh. They will be used at Columbus.

L. C. Shaw & Co. of Philadelphia report business good in their line. They have just furnished a 125 horse-power Watertown automatic engine and two 70 horse-power boilers to Sharpless & Carpenter, Greenwich Point, Philadelphia, a 70 horse-power special return-flue locomotive boiler to the Cape May Fire & Water Company for use in their pumping station; a 100 horse-power automatic engine to Jas. Martin & Co. of Philadelphia. Among orders in hand is one for a 140 horse-power automatic high-speed Watertown engine and two 80 horse-power boilers for the Gallitzin Electric Light Company, Gallitzin, Pa., and another for two 60 horse-power boilers, a 75 horse-power engine, steam pumps and other plant for the Berlin Veneer Works, Berlin, Md.

The Barr Pumping Engine Company of Philadelphia have received an order from the Wheeling Steel & Iron Company to build for them a compound pressure pump, 24 and 40 x 10 x 36. The steam valves are to be of the rotary type, and the water cylinders to be constructed entirely of cast steel, for continuous working under 1000 pounds pressure per square inch. They have also been awarded the contract for the erection of complete water works, including the pumping engines, boilers, &c., for the borough of Atlantic Highlands, N. J.

Miscellaneous.

Although the King Bridge Company of Cleveland, Ohio, have sustained some damage to their riveting department by reason of fire, their power plant, machine shop and forge department were, with very slight exception, uninjured and are running as usual. They expect to complete contracts they have on hand promptly and any new ones that they may succeed in obtaining. They will also at once commence the construction of an entirely new riveting department.

The Garry Iron & Steel Roofing Company of Cleveland, Ohio, have greatly increased their capacity by adding a 150-horse-power engine and several other machines necessary to improve and expedite their work, as the rapid increase of business demands it.

Among recently authorized corporations in Illinois are the following: The Continental Gas Company, at Chicago; capital stock, $10,000,000; for the manufacture of gas, oxygen, oxygen gas, electricity, and any and all means or agencies for the furnishing, production or distribution of light, heat, power or fuel, for any and all purposes, in the city of Chicago or such other place or places in the State of Illinois, the United States, or any foreign country as the Board of Directors may elect; also to deal in and operate the plants, property,

good will, rights and franchises of other corporations organized for the same purpose, and to deal in patent rights: incorporators, Charles Springer, Ernest B. Stuart and Charles S. Corning. The Underwriters' Fire Sprinkler Company, at Chicago; capital stock, $100,000; for the manufacture of automatic sprinklers and appliances; incorporators, O. Pierce, A. H. Dwight and W. E. Dwight. The Champion Flue Scraper Company, at Peoria; capital stock, $7500; for manufacturing; incorporators, Fred. Gauger, Veitus Rad-pinner and Charles J. Miller. The Cass Electric Company, at Chicago; capital stock, $50,000; for the manufacture of electrical supplies; incorporators, Millard Cass, A. A. Ollendorff and Carl Landan. Columbian Railway Supply Company, at Chicago; capital stock, $10,000; for the manufacture of railway and steamship supplies; incorporators, Roswell H. Mason, George M. Trowbridge and William B. McIntyre. The Progress Novelty Mfg. Company, at Chicago; capital stock, $25,000; for the manufacture of store fixtures and novelties; incorporators, Henry T. Van Denbergh, J. E. Nelson and G. W. Van Denbergh. The Deforest Bicycle & Mfg. Company, at Chicago, capital stock, $200.000; for the manufacture of bicycles, vehicles and toys; incorporators, George H. Welton, A. F. Dreutzer and Charles G. Quelton. The Chicago Flax Packing Company, at Chicago; capital stock, $25,000; for the manufacture of packing and engineers' supplies; incorporators, Harry N. Anderson, Charles R. Holden and Alfred S. Austrian. The Kunzer Smoke Preventer Company, at Chicago; capital stock, $20,000; for the manufacture of smoke preventing and consuming devices and to conduct a machine shop and foundry; incorporators, Mr. Kunzer, Louis J. Hammel and Geo. W. Warvelle.

The Minneapolis Air Brake Improvement Company have filed articles of incorporation at Minneapolis, Minn The capital stock is fixed at $500,000, in shares of $100 each, and the purpose of the concern is to manufacture air brakes.

The Strong Locomotive Mfg. Company of Cincinnati, Ohio, have been dissolved at the request of a majority of the Board of Directors, who also control a majority of the paid-up stock. The company were organized in 1890 with a capital stock of $1,000,000, of which only $149,500 was subscribed and but $8700 paid in. For this reason the manufacture of locomotives was never commenced.

The National Brass Works of Reading, Pa., will build two new additions to their plant, each three stories in hight and 40 x 6' and 20 x 50 feet in size respectively.

The Pope Mfg. Company of Hartford, Conn., have devised a plan for the betterment of the condition of their employees, the idea being to set apart 100 acres at Parkville, near their new tube works, for homes for their 1500 employees. The men can select lots and pay for the houses to be erected by monthly installments.

It is said that a company of West Bay City, Mich., capitalists purpose to erect shops for the construction of freight cars at Grand Rapids, and that they will begin with a capital of $150,000.

The Queen City Radiator Company, recently incorporated, with a capital stock of $560,000, will erect a two-story brick building at Fairmount, near Buffalo, N. Y. About 300 hands will be employed in the manufacture of radiators for hot-water, steam and electric heating.

The new plant of the E. C. Morriss Safe Works, at Readville, Mass., has been completed and the manufacture of safes will begin at once. The special feature of the works is the employment of electric motors to run the different tools, doing away with line shafting.

The Scranton Iron Fence Company of Scranton, Pa., have purchased a new tract of land on which they will erect a new plant. The increase in their business has forced them out of their present quarters.

The large pump factory at Middletown, Ohio, has been burned.

The Archer & Pancoast Mfg. Company of Brooklyn, N. Y., manufacturers of brass work and fixtures, have gone into the hands of receivers. The liabilities are estimated at $1,000,000.

At the annual meeting of the stockholders of the Westinghouse Electric & Mfg. Company, held in Pittsburgh on Wednesday, the 17th inst., the following directors were elected: Charles Francis Adams, Lemuel Bannister, August Belmont, N. W. Bumstead, A. M. Byers, Marcellus Hartley, George W. Hebard, Henry B. Hyde, Brayton Ives and George Westinghouse, Jr In his report to the stockholders George Westinghouse stated that there were 508 central stations now using machinery of the Westinghouse Electric & Mfg. Company. The railway apparatus is now in use upon 233 railways, 110 of which had been users of the Thomson Houston, Edison and Short motors. Out of these 110 companies, 17 have discarded the apparatus manufactured by the other companies. The orders on hand, with those received April 1, the beginning of the fiscal year, aggregated $3,028,048.32, about double the figures at the same date last year. The company have turned out their product during the past three months at the rate of over $8,000,000 per annum, and now have on their payrolls 3942 operatives.

A representative of the D. Kennedy Valve Mfg. Company of Coxsackie, N. Y., has been in Albany, N Y., several days with a view of removing the plant to that city.

Fire in the shops of the King Iron Bridge Company, at Cleveland, Ohio, destroyed shop No. 1 and damaged shop No. 2. Loss, $150,000; insurance, $100,000.

It is officially stated that the works of the Laidlaw-Dunn Company of Cincinnati, Ohio, will be removed to some other locality not yet decided upon.

The Norton Emery Wheel Company at Barber's Crossing, near Worcester, Mass., are preparing to double the capacity of their works by the erection of two new structures.

The Joy & Seliger Company, manufacturers of metal goods and novelties at Newark, N. J., have gone into the hands of receivers. Lack of sufficient capital and slow collections are given as the causes of the failure. The company have made a statement, in which the assets are placed at $95,994 and the liabilities $63,300. They have been doing a large business, and report orders on hand at the time of the assignment amounting to $19,800.

Trade Publications.

THE EYNSER-EVANS MFG. COMPANY of Philadelphia, Pa., have issued an illustrated catalogue of brass and iron body globe, angle and check valves. The company claim to produce valves much heavier than the common or ordinary market valves, at moderate cost.

AN ELABORATELY ILLUSTRATED and handsomely printed catalogue of 317 pages has been received from the Berlin Iron Bridge Company of East Berlin, Conn. Perhaps we can convey the best idea of the scope of this catalogue by quoting as follows from the introduction: "In the past few years modern shop practice has advanced by rapid strides, so that plants built within the last few years can turn out work and make a fair profit where shops which were built according to old ideas could not even make a living. The introduction of electricity, traveling cranes, power jib cranes, &c., has made vast changes, especially in the handling of heavy product, and no machine builder of the present time with anything like advanced ideas would think of constructing a foundry or machine shop in which it was proposed to handle large work without making provision for a traveling crane. The designing and building of modern engineering plants has, therefore, become a science comparatively new in this country, but at the same time of great importance. American manufacturers are fast learning that the first cost of a new plant is not as great an element to be considered as to have the plant so constructed as to reduce to the absolute minimum the cost of production as well as the cost of repairs on the plant. If some of our manufacturers occupying old works would keep accurate account for a year of the expense of repairs on their whole plant they would find that this expense would easily pay the interest on a good iron and brick building. A modern manufacturing building constructed of iron and brick is as much a scientific creation as an iron railroad or highway bridge. We have built more buildings of this class than any other company in America, and nearly as many as all combined. This catalogue illustrates a large class of buildings designed and built by us

"The advantage of an iron building over a wooden building as ordinarily constructed is so obvious that it almost seems out of place to take up space in a catalogue of this kind with commenting on the subject. In the first place, the question of insurance. Insurance, like interest, eats up money every year. In almost all plants the building itself is but a small portion of the outlay. Expensive tools and machinery are required and after the plant is in operation a large amount of money is invested in stock, wrought and unwrought, for the purpose of manufacture, which is always stored in the plant. Under these circumstances, the fire loss is generally small on the building itself compared to the loss on tools, machinery and stock, wrought and unwrought, in the building. Generally speaking, manufacturers carry ample insurance on their buildings, but the insurance on tools and machinery, as well as on the stock contained in their buildings, is entirely inadequate. It is not wise for a manufacturer to economize in the construction of his buildings when they make up so small an item, comparatively speaking, in the total cost of the plant when in operation. If a manufacturer can build a plant that is absolutely fireproof, that is well lighted and well ventilated, notwithstanding the expense is a trifle more than a wooden building, is it not a prudent expenditure? The present prices of iron and steel place a construction of this kind within the reach of every manufacturer."

CATALOGUE OF SWEDISH EXPORTS; edited by Wilhelm Tesch, Managing Director of the General Export Association of Sweden, Stockholm, 1892. With the view of increasing the export trade of Sweden an association has been formed which is known as the "Sveriges Allmänna Exportförening," or General Export Association of Sweden. This association includes the most prominent representatives of the various branches of Swedish industry and trade, and their object is stated to be to "afford the members new or increased opportunities of exporting their products by suitable arrangements in Sweden and abroad." The greater part of the expenses of the undertaking are met by the State; and the association is prepared to give every assistance to those who wish to do business with Swedish manufacturers or exporters, even with those who are not actual members of the association. With this end in view they have issued a handsome catalogue in English, attractively bound and well gotten up as to text and illustrations, which contains a vast amount of interesting and useful information in regard to the goods Sweden has to offer, together with the names and full particulars of firms doing business in various departments of trade. These are divided into the agricultural, timber, iron and steel, engineering and hardware, chemical, stove and glass, textile and liquor, and comestible industries. Of these, the timber trade is naturally the most important; but the exports of iron ores and raw and manufactured metals come next in order. From the tables published in the catalogue we find that Sweden's export trade with the United States had in 1890 shrunk to one-third of what it was in 1886; while her general export trade had increased 50 per cent. in the same period. This may be attributable to the smaller demand for Swedish iron from this country. The articles of hardware catalogued as made in Scandinavia show an extensive line of manufacture in this department of trade, and we are told it is a rapidly increasing one. The catalogue under consideration forms a valuable hand-book of information to those interested in the state of Swedish industries. It can be obtained post free by application to the Sveriges Allmänna Export-förening, Stockholm, Sweden

L. SCHUTTE & CO. of Philadelphia issue a 44-page catalogue covering a line of goods to be found in their exhibit at the World's Fair and including the Universal double tube injector, locomotive injectors, condensers, syphons, cellar drainers, steam jet apparatus, blowers and ventilators, air compressors and exhausters, hydraulic machinery, test pumps, &c.

TRADE REPORT

A diligent search fails to develop many features of encouragement in the general situation. Buyers are exceedingly conservative, and sellers discriminate sharply among their customers. The result is that markets are exceedingly dull. Occasionally special transactions come to the surface, but it is usually the triumphant buyer rather than the lucky seller who reports them as proof of his skill in driving a sharp bargain. "Private terms" is the refuge of the seller in these days.

In Pig Iron, reports from all the leading markets reflect the general business situation. Sales are on a very moderate scale. The action of the railroads in regard to freights to interior points in E stern Pennsylvania and New Jersey simply transfers the pressure to other markets, notably those accessible from tidewater, and those north of the Ohio River. It crowds the local furnaces into a narrower territory, and may restrict their markets by making their customers less able to compete against producers in other sections who have the advantage of cheaper material.

A pretty large Cast-Iron Pipe contract is about to be given out in New York.

The entire line of products, from Pig Iron to manufactured goods of many classes, is affected chiefly, at the present time, so far as the West is concerned, by the chances of a fight between the union manufacturers and the Amalgamated Association. The mills are crowded with work to stock up, thus creating an active demand for Pig Iron, Billets, &c., and making sellers generally less urgent than they might otherwise be.

The manufacturers are in earnest this year concerning a readjustment of the wages scale. If all were on the same basis, there might be less determination. But important concerns are now nonunion and have advantages in the matter of lower cast which must be equalized. One of the greatest firms in the country, conspicuous above all for its fair and friendly spirit in its dealings with its men, is cited as likely to insist upon a readjustment.

It is possible that financial necessity may cause a quick surrender on the part of some of the weaker mills, but with the great leaders no such considerations will influence whatever action is taken.

In the Metal markets the one conspicuous fact is that the Tin speculators are bending under the burden of accumulated supplies. The metal dropped down to 18¼¢ during the week.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, May 31, 1893.

There is no improvement in the tone of the Iron trade. Even those who have been steadily resisting the discouraging influences about them and have been hopeful that the situation might in some way change for the better, are now preparing for the worst. The lessening of purchases and curtailment of credits are now almost universal. The pressure for money is increasing, and the very conservative policy of the banks here is being felt seriously. The most important failure in the past few days closely allied with the Iron Trade is that of Weaver, Getz & Co., coal merchants.

Pig Iron.—Coke Iron is in fair demand in small lots. Some consumers of Southern Coke have placed season contracts for 1000 to 4000 tons, but local Coke has been comparatively neglected. Nothing special has transpired with regard to Charcoal. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$16.50 @ $17.00
Local Coke Foundry, No. 1	13.75 @ 14.25
Local Coke Foundry, No. 2	13.00 @ 13.25
Local Coke Foundry, No. 3	12.75 @ 13.00
Local Scotch	14.00 @ 15.00
Ohio Strong Softeners	16.00 @ 16.50
Southern Silvery, No. 1	@ 15.00
Southern Silvery, No. 2	@ 14.50
Southern Coke, No. 2	12 85 @ 13.25
Southern Coke, No. 3	12 35 @ 12.75
Southern, No. 1, Soft	12.85 @ 13.25
Southern, No. 2, Soft	12.35 @ 12.75
Southern Gray Forge	11.85 @ 12.25
Tennessee Charcoal, No. 1	16.50 @ 17.00
Alabama Car Wheel	@ 18.85
Coke Bessemer	14.50 @ 15.00
Hocking Valley, No. 1	16.75 @ 17.00
Jackson County Silvery	16.75 @ 17.00

Bars.—Large consumers are gradually working up to the point of closing season contracts. They know that prices are now lower than ever before, and feel that they could hardly expect to do better, yet the market is so weak that they are not at all certain on this point. The probabilities of a widespread labor trouble after July 1, however, makes them apprehensive of a scarcity of material, like that of last year, and they think it might prove a good thing for them to accumulate some stock in June. It seems likely now that some mills will not wait until July to shut down, as they are not inclined to meet the market, and may thus run out of work. The base price of Common Bar Iron is now from 1.45¢ to 1.50¢, Chicago, for mill shipments. Soft Steel Bars keep up well, but it is noticeable that the high-priced mills are lowering their quotations, and 1.65¢ now seems the top of the market, some sellers naming down to 1.60¢. Small lots from stock are unchanged at 1.65¢ @ 1.75¢ for Iron and 1.75¢ @ 1.85¢ for Soft Steel.

Structural Material.—Sales are confined to small lots. A few large buildings are gradually being brought to the contracting point, and one of them in Milwaukee may be let this week. Mill shipments, Chicago delivery, are quoted as follows: Beams, 1.85¢ @ 1.95¢; Tees, 1.95¢ @ 2 05¢; Angles and Universal Plates, 1.85¢ @ 1.90¢ Small lots from stock sell at 15¢ @ 20¢ ₱ 100 above these prices.

Plates.—West Superior was the point of attraction last week in the Plate trade. Several hundred tons were bought by the Barge Company for ore shutes. The price is reported to have been extremely low, but the successful bidders will have a very light freight rate by water. Large orders are expected to be up soon for Ship Plates at the same place. Trade here is very quiet. Quotations on mill shipments, Chicago delivery, are as follows: Tank Steel, 1.75¢ @ 1.85¢; Shell Steel, 2.05¢ @ 2.15¢; Flange Steel, 2.20¢ @ 2.30¢; High Grade Fire Box, 2.75¢ @ 5¢ Store prices are as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.20¢ @ 2.40¢; Shell, 2 35¢ @ 2.50¢; Flange Steel, 2 60¢ @ 2.80¢; Boiler Tubes, 67½ % @ 70 %.

Sheets.—A moderate demand for Black Sheets is noted by manufacturers' agents, who continue to quote 2.85¢ @ 2.90¢ for No 27 Common. Jobbers have not yet fixed prices for the summer. Galvanized Iron is doing better than Black Sheets, but with prices unchanged at 70 and 10 % off for mill shipments of Juniata. Sheet Copper is steady at 30 and 5 % off on small lots.

Merchant Steel.—Mill shipments are quoted as follows: Smooth-Finished Machinery, 1 90¢ @ 2 10¢; Open-Hearth Spring, 2¢ @ 2 20¢; Smooth-Finished Tire, 2¢ @ 2 10¢; Iron-Finished Tire, 1.70¢; Ordinary Tool, 6¢ @ 7¢, and Specials, 12¢ upward

Rails and Track Supplies.—Small lots of Steel Rails are in better demand and the continuous orders of this character now coming in show that track repairing is now being done very generally. Trade of this character is better from roads in the immediate Chicago territory than from those at a distance. Inquiries for Splice Bars are increasing with the better volume of business in Rails. Prices are as follows: Rails, $30 @ $32; Splice Bars, 1.65¢ @ 1.70¢; Track Bolts with Hexagon Nuts, 2.60¢ @ 2.65¢; Spikes, 1.90¢ @ 2¢.

Old Rails and Wheels.—No transactions in Old Iron Rails are reported. Railroads now intimate that they will take somewhat lower prices, but will not as yet go below $17.50. Consumers think $17 is a high price to pay under existing conditions. Old Steel Rails are quoted at $10.75 @ $15, according to length. Old Car Wheels are very abundant and offered by various railroads, but prices are kept up to $14 50 @ $15, with only light sales.

Scrap.—The market is quiet and prices are weak. Dealers continue to ask the following rates: No. 1 Forge, $14; No. 1 Mill, $10; Sheet Iron, $6; Pipes and Flues, $9.50; Axles, $21; Horseshoes, $14; Fish Plates, $15.50; Spikes and Bolts, $13.50; Cast Borings, $5.75; Wrought Turnings, $7.75; Axle Turnings, $9.50; Heavy Cast, $11; Stove Plate, $8.50; Malleable Cast, $9; Mixed Steel, $10 @ $10.25, gross ton; Leaf Steel, $17.75.

Metals.—Copper is dull, with carload lots of Lake held at 11½¢, and casting brands at 10½¢. Spelter is weak at 4¢ @ 4 05¢.

Louisville.

LOUISVILLE, KY., May 29, 1893.

Prices continue the same with buying largely only for current needs. Some consumers do not feel that the market can be lower, but consider that at the present moment it is not wise to contract for more Iron than their immediate needs suggest; there are other buyers who recognize the extreme low prices, and knowing that there will be a need on their part for Iron during the year, are taking a positive position and purchasing, as they feel that with the number of furnaces out it is to their in-

terest to buy a reasonable amount of Iron now, owing to the lowness of price

Business among car companies is becoming slack, and report from them is that orders for new cars are very few, and companies now running full are working largely on orders taken at the beginning of the year. There is very little demand for Car Wheel Irons at present.

We quote for cash, cars Louisville:

Southern Coke, No. 1 Foundry	$12.75 @ $13.25
Southern Coke, No. 2 Foundry	11.50 @ 12.00
Southern Coke, No. 3 Foundry	11.00 @ 11.25
Southern Coke, Gray Forge	10.50 @ 10.75
Southern Charcoal, No. 1 Foundry	15.00 @ 16.00
Southern Car Wheel	17.50 @ 17.75

Macfarlane & Mordue, Commerce Building, Louisville, Ky., have been appointed sales agents for the Woodward Iron Company's Pig Iron for Kentucky and Southern Indiana.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., May 30, 1893.

The fifth month of the year has closed on an exceedingly dull market in Iron and Steel, and with a somewhat gloomy outlook generally. The trade are still hopeful that the fall months may develop improvement, but for the summer months there is little room for expecting anything but a dull dragging time. The fact of the matter is that at present everything appears to be at sixes and sevens, and it will require a good portion of the summer months to adjust matters to their normal conditions. There is the question of freights, the question of labor, the question of crops, the question of finance and the question of success or non-success of the World's Fair, all of which will have a more or less important bearing on business during the later months of the year; and while every one hopes for the best, there is a general disposition to do as little as possible until the situation becomes more settled than it is at present. On the whole there is a fair volume of business extending about 30 days ahead, besides some very important contracts covering not only this year but the year following; but these are chiefly Government work, and shipbuilding, and, therefore, not likely to influence general business, except indirectly. It would be pleasanter to write more hopefully in regard to the outlook, but it is generally recognized that the situation is complicated if not critical.

Pig Iron.—Business is extremely dull, consumers being more inclined to secure deliveries on old contracts than to engage in new ventures. For similar reasons furnaces are kept busy in making shipments and for the present have no need to worry about orders, as their product is largely sold, covering a period of three or four months to come. Stocks are not large and the general situation appears to warrant holders in quoting firm prices, notwithstanding the fact already noted that buyers show very little disposition to increase their engagements. The Southern freight rate is still an unsettling factor, inasmuch as it will merely transfer competition to other points, and practically leave matters very much in their present position. There is just as much Iron for sale, and if rail freights shut it out at one point water gives a means of access to others, so that it is largely a question of adjustment to new conditions. Nevertheless, an advance of from 25¢ to 50¢ ₱ ton has been made on local and Central Pennsylvania deliveries, and from all appearances it will be maintained unless there is a falling off in consumption or an increase in production, the latter being somewhat of an improbability. General quotations are about as follows, and from 20¢ to 25¢ less for Southern Irons at Harrisburg and intermediately to Baltimore:

American Scotch, No. 1X	$16.00	@	$16.50
American Scotch, No. 2X	15.00	@	15.50
Standard Penna. (Lake Ore), No. 1x	15.00	@	15.50
Standard Penna. (Lake Ore), No. 2x	14.50	@	14.75
Standard Virginia, No. 1x	14.75	@	15.00
Standard Virginia, No. 2x	13.75	@	14.25
Virginia and Southern, No. 1x, Soft	14.25	@	14.50
Virginia and Southern, No. 2x, Soft	13.50	@	13.75
Standard Penna. and Virginia Forge	13.00	@	13.25
Ordinary Forge	12.50	@	12.75

Steel Stock.—Production in this vicinity has virtually ceased, and as current prices offer no inducement to furnace owners inactivity is likely to continue until prices improve or cost can be reduced. Sales in small lots have been made at $16.25 @ $16.30 delivered, for Standard Bessemer and $18 @ $18.25 for Low Phosphorus. Stock at furnaces nearly exhausted.

Steel Billets.—Market dull but firm for deliveries within the next 30 days. For September and later dates makers would probably shade prices, but as there is no disposition to do business buyers are not urged to make bids, which, in any event, would probably not be accepted. Sales in medium-sized lots at $23.75 @ $24 for Western Steel, June and July deliveries, with sellers at $23.50 for later dates.

Steel Rails.—Business extremely dull, but prices unchanged at $29 f.o.b. cars mills. Girder Rails are in active demand, with sales at $33 @ $35, f.o.b. cars, mills.

Muck Bars.—There is a better demand, and prices are slightly firmer at about $23.50 delivered for Standard makes. A few sales have been made at this figure, but buyers generally are unwilling to pay over $23 to $23.25, which, considering the season, makers are not inclined to accept.

Bars.—The demand is not of a specially encouraging character, although there is a good demand for small lots, on which mills are kept fairly busy. Prices are very low, however, 1.50¢ @ 1.55¢ at interior points, and 1.60¢ @ 1.65¢ for best quality Bars, city deliveries. Steel Bars, 1.60¢ @ 1.85¢, according to quality.

Skelp.—Some good sized orders have been placed during the past week, and manufacturers are asking a little more money, say 1.55¢, with sales at 1.52½¢ @ 1.55¢, according to what the order may be.

Plates.—Business has been rather quiet during the past week. Large lots are not inquired for at present, but the demand from small consumers is maintained, which, with liberal specifying on old contracts, keeps the mills moderately well employed. The immediate outlook is not encouraging, however, and the chances are that the midsummer suspension of work will be more protracted than usual. Meanwhile, in the absence of large orders, prices are steady, although on anything specially desirable concessions are easily obtained. General quotations are about as follows:

	Iron.	Steel.
Tank Plates	1.80 @ 1.85¢	1.80 @ 1.85¢
Shell	2.10 @ 2.20¢	2.10 @ 2.20¢
Flange	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities	3.25 @ 3.75¢	

Structural Material.—There is some figuring going on in regard to the Shapes for the New York Central (Park avenue extension) and also for some work in Camden, but the amount actually closed since last week has not been important. Mills moderately well employed, but there is sharp competition on new work, and on large orders prices are exceedingly low. For small lots quotations are nominally as follows: Beams, Channels, or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.80¢ @ 1.90¢.

Sheets.—Good demand for thin Sheets, but at irregular prices. Low priced goods of inferior make interfere considerably with legitimate trade, and while quotations are nominally as follows for small lots, inferior qualities can be had at less money, according to delivery, size of order, &c.:

Best Refined, Nos. 14 to 20	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26	3.15¢ @ 3.20¢
Best Refined, No. 27	3.30¢ @ 3.40¢
Best Refined, No. 28	3.40¢ @ 3.50¢

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than here named:

Best Soft Steel, Nos. 14 to 16	2½¢ @ 2⅝¢
Best Soft Steel, Nos. 18 to 20	2½¢ @ 3¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ 3¼¢
Best Soft Steel, Nos. 25 to 26	3⅜¢ @ 3⅜¢
Best Soft Steel, Nos. 27 to 28	3⅜¢ @ 3½¢

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, dis.	70 and 5% @ 70 and 10%

Old Material.—Dull, but at the low figures ruling there is not much room for concessions, unless in case of forced sales, in which special terms have to be arranged. General asking prices are about as follows: Old Iron Rails, $17.00 @ $18, delivered; Old Street Rails, $19 @ $19.50; Old Steel Rails, $15 @ $15.50; No. 1 Railroad Scrap, $15 @ $16, Philadelphia, or for deliveries at mills in the interior, $15 @ $16, according to distance and quality; $8 @ $9 for clean new No. 2 Light Scrap; $7.50 for old No. 2 Light Scrap; $11.50 @ $12 for Machinery Scrap; $12 @ $12.25 for Wrought Turnings; $8 for Cast Borings, and nominally $22 for Old Fish Plates, and $13 @ $14 for Old Car Wheels.

Wrought-Iron Pipe.—There is very little business at present, and while prices are not strong, there is not enough demand to make it worth while cutting. Discounts are nominally as follows:

Butt-Welded Black	57½%
Butt-Welded Galvanized	50%
Lap-Welded Black	67½%
Lap-Welded Galvanized	57½%
Boiler Tubes, 2¾ inches	65%
Boiler Tubes, 3 inches	67½%

H. A. Brown, who was with Jas. G. Lindsay & Co. for several years, has resigned his position with that firm to assume the management of the Philadelphia business of Park, Brother & Co., limited, of Pittsburgh. Mr. Brown entered upon his new engagement a few days ago, the office being 523 Arch street, Philadelphia.

St. Louis.

(*By Telegraph.*)

Office of *The Iron Age*, Bank of Commerce Building, St. Louis, May 31, 1893.

Pig Iron.—It is difficult to report the Pig Iron market satisfactorily to all concerned, as every furnace representative seems to be working on a special line so far as prices are concerned. Some hold Gray Forge at $8.25, while others are accepting orders at $8 and consumers advise us that they have been offered all they require at $7.75. This condition of affairs is also applicable to other grades of Iron as well as to Gray Forge. The agreement entered into between the Pennsylvania and Baltimore & Ohio roads to advance freight rates to Eastern points will have a tendency to make the offerings to Western points more liberal, as Western freight rates remain unchanged. There is plenty of Iron now being offered, and this additional quantity will only tend to weaken the market, which is already in a very shaky condition. The financial stringency is causing some furnaces to watch their sales more closely than they otherwise would, and instead of loading up, consumers are inducing them to reduce the stocks already in hand. On the other hand, however, those brands which are not well known in the market are freely offered for about what they will bring. Under these conditions prices are difficult to quote, but those given below represent a fair average price for the different grades. We quote as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.00 @ $13.50
Southern Coke, No. 2 Foundry	12.00 @ 12.25
Southern Coke, No. 3 Foundry	11.00 @ 11.75
Southern Gray Forge	11.25 @ 11.50
Southern Car Wheel	17.75 @ 18.25
Lake Superior Car Wheel	17.00 @ 17.50
Ohio Softeners	16.00 @ 17.00
Missouri Charcoal, No. 1 Foundry	13.00 @ 13.50

Bar Iron.—The demand for Bar Iron shows a slight falling off, and mills are on the look-out for orders. Prices are weaker and 1.50¢, f.o.b. cars East St. Louis, is quoted freely by mills for carload orders. Jobbers are not busy and quote 1.65¢ @ 1.70¢, according to quantity.

Barb Wire.—The trade in Barb Wire continues to fall off, and prices are weaker in consequence of the extreme liberal offerings now being made by mills. Mills are carrying larger stocks than is usual at this time of the year, and to dispose of this surplus stock prices are shaded accordingly. Jobbers report a fair trade only. Mills quote $2.10 @ $2.15 for Painted, carload lots, to jobbers. Galvanized is quoted at 40¢ ℔ cwt. additional.

Wire Nails.—The trade has been extremely disappointing during the month of May, which is largely accounted for by the unseasonable weather prevailing during the entire month. Prices are weak and sales are made from mill in carload lots to jobbers at $1.55 with the intimation that this price could be shaded. Jobbers ask $1.65 @ $1.75, according to quantity.

Pig Lead.—The firmness noted in our last report continues a feature of this department. Offerings are limited at 3.70¢ and some holders are asking 3.75¢ and will doubtless receive it before the week is out, as the stock in sight is not heavy and the consumptive demand shows general improvement.

Spelter.—No improvement to note in this metal. Offerings are free at 3.90¢ @ 3.95¢ for delivery during the balance of the year, and even this price fails to secure buyers. The future of Spelter does not appear the least bit encouraging. The coal strike in the Kansas district will hardly affect the market, as the strikers have made arrangements with the Spelter operators to supply them with coal sufficient to keep their furnaces in operation.

Boston.

Office of *The Iron Age*, 146 Franklin St., Boston, May 30, 1893.

There is but one story in all branches of the trade, and that is the exceedingly quiet tone which prevails. There is, of course, more or less doing, but the market is without snap. The effect of the financial stringency is already being felt in the Iron trade, but in nothing more than in the market for Steel Rails. The beginning of the year saw the projection of many miles of electric railway throughout the State, and it seemed as though an era of active building and speculation in this direction was about to be entered upon. On paper the Commonwealth was covered with a network of electric railways, and some of the projected lines would have formed serious competitors for the steam railroads. But all that is changed now. Most of these schemes have either been dropped entirely or have been allowed to sink into temporary oblivion. It is true that the projectors of some of the roads were only endeavoring to control desirable territory for future profit; but many of them were *bona fide*, and the result of the financial flurry has been to stop all work in most cases. For the time being, therefore, the market for Steel Rails must suffer.

Pig Iron.—There is a very quiet market for Pig Iron. Buyers are very conservative and taking only enough for current needs. They expect to see lower prices as the result of financial troubles, and are buying very carefully indeed. This makes the market very quiet for the time, but the situation is firm from the agents' standpoint, and they show no disposition to shade prices even to increase business. Quotations on Southern Iron, laid down in Boston, are as follows: No. 1, $15 @ $15.50; No. 2, $14.50 @ $15; No. 3, $13 @ $14. For Pennsylvania Iron the market is quiet but steady, with quotations at shipping port, No. 1, $14.50 @ $15; No. 2, $13.50 @ $14; Gray Forge, $13 @ 13.50.

Bar Iron.—There is no change to note in the Bar Iron market. Trade is steady and considerable Iron is being taken for consumption. The Warr mill at Wareham has at last been started and is now making Bar Iron from old material. Prices are steadily held, and the market is in good shape, though the tone seems rather quiet. Ordinary New England Bars are quoted at 1.60¢ @ 1.65¢ from mill; from store, 1.65¢ @ 1.70¢; best Puddled Iron Bars 1.80¢ @ 1.90¢ from mill; from store, 2¢ @ 2¼¢. Norway and Swedish Irons are quoted at $64.50 @ $66 for Bars and Shapes.

Building Iron.—The market for Structural Iron shares in the general dullness, though the outlook is by no means bad. Some large buildings are projected and the contracts for the Iron are yet to be placed. Just at present, however, matters are a little quiet and no large contracts are in the market. The possibility of labor troubles at Pittsburgh after July 1 is an active factor in the market and undoubtedly will result in the early placing of such contracts as are in readiness. Quotations are steady and unchanged at: Beams and Channels, from mill, 1.90¢ @ 2¢; from store, 2.30¢ @ 2¼¢; Tees, 2.20¢ @ 2.30¢, from mill; from store, 2.40¢ @ 2.65¢; Angles, 1.90¢ @ 2¢ from mill; from store, 2.30¢ @ 2.45¢.

Steel, Steel Plates and Steel Rails.—There is only a fair demand for Merchant Steel. There is a little better tone to the market, but trade is still very quiet. As indicated above, Steel Rails are quiet, and likely to continue so for the present. Some prospective buyers are out of the market, and a dull tone is the consequence. The market for Steel Plates is steady, with a fair amount of business being done. The market on Merchant Steel is quoted at: Bessemer Steel, 2¢ @ 2.10¢; Tire and Sleigh Shoe, 1.95¢ @ 2¢; Sheet, 2¼¢ @ 2¾¢; American Cast, 6¾¢ @ 7¢; English Cast, 14¢ @ 15¢; American Steel Rails, $29 ℔ ton at mill. The quotations on Steel Plate are: Tank, 1.85¢ @ 1.90¢; Shell, 1.95¢ @ 2¢; Refined, 2.10¢ @ 2.15¢; Flange, 2.15¢ @ 2¼¢; Fire Box, 2¼¢ @ 2¾¢.

Nails.—There is a very good demand for Nails, though the prices are low and the margin of profit small. Prices are steady at $1.50 @ $1.60 for small lots, and $1.45 @ $1.50 for round lots of both Iron and Steel Cut Nails. Steel Wire Nails are quoted at $1.70 @ $1.75 ℔ keg.

Pipe and Tubes.—There is a good business being done in Pipe. Some improvement has been noted during the past week. The recent advance in prices made by the manufacturers has not checked trade, and the market is firm. Boiler Tubes are in fair request and steady at the decline.

Scrap Iron.—There is a very quiet market for Scrap, and low prices are quoted for mixed lots. As low as 50¢ is mentioned, while for extra lots as high as 70¢ has been paid. The last quotation, however, is for lots free from Tire Steel and composed wholly, or nearly so, of free-working Iron. Old Horseshoes are quoted at 60¢. Light Scrap is quoted at 35¢ @ 40¢, with Machine-Shop Scrap at 25¢ @ 30¢ for Cast and 30¢ and 35¢ for Wrought.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main Sts., Cincinnati, May 31, 1893.

The volume of business in Pig Iron has been only moderate during the week, consumers have manifested no disposition to buy for forward delivery and some who for a long time have done so are now refusing to anticipate their wants for more than a month, alleging that they can buy at least as cheap during the summer whenever they need it, and their experience for the last two years has been that they could buy the Iron cheaper when the time came for using it than they had contracted to pay for it. There are so many consumers who have for some time refused to anticipate their wants that their current purchases in the aggregate are now considerable although none of them are large. A conspicuous feature of the trade is a general application to have deliveries delayed on current contracts.

This is especially the case with stove works and car works. Iron Pipe works appear to be in an exceptionally prosperous condition and are melting quite as much Iron as usual at this season of the year. Prices of Southern Coke Iron remain the same as a week ago, except that Mottled Iron is scarce and commands the same price as Gray Forge. Charcoal Iron is generally quiet and lower prices prevail, but there have been fair sales of Lake Superior Charcoal Iron. We give revised quotations;

Foundry.	
Southern Coke, No. 1	$13.00 @ $13.25
Southern Coke, No. 2	11.50 @ 11.75
Southern Coke, No. 3	11.00 @ 11.25
Ohio Soft Stone Coal, No. 1	16.00 @ 16.25
Ohio Soft Stone Coal, No. 2	15.00 @ 15.25
Lake Superior Coke No. 1	15.00 @ 1 .25
Lake Superior Coke No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee and Alabama Charcoal, No. 1	15.00 @ 15.50
Tennessee and Alabama Charcoal, No. 2	14.00 @ 14.50
Forge.	
Gray Forge	10.50 @ 10.75
Mottled Coke	10.50 @ 10.75
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	$16.75 @ $18.00
Lake Superior Car Wheel and Malleable	17.25 @ 17.50

Cleveland.

CLEVELAND, OHIO, May 29, 1893

Iron Ore.—The market is entirely unchanged. Buyers are particularly shy of it and hesitate about the smallest kind of purchases even to supply immediate wants except in cases of urgent necessity. Even then they cling close to the price already fixed by buyers—$3.75 ℔ ton for Bessemers—and refuse to go any higher under any circumstances. The sales for the past week have been very few, although the movement forward to the furnaces has been fair. Just 42 000 tons were sent on from Cleveland during the past week, as compared with 19,000 tons for the same week in 1892. The shipments from the upper lake ports have correspondingly increased. Vessel rates are still a bit uncertain, with Ashland charters going at 95¢ ℔ ton, and the Escanaba rate varying from 55¢ to 65¢ ℔ ton to Ohio ports. The unsold non-Bessemer Ores on the docks are selling fairly well at $2.75 @ $3.15 ℔ ton, while the Bessemers mined in 1892 are practically cleared up. The market is in better condition than for several weeks past, inasmuch as the improved demand for Bessemer Pig gives buyers renewed confidence. Buyers, however, are firm in their determination not to anticipate their requirements by going beyond their own prices as fixed upon several months ago. These prices are on the basis of $3.75 ℔ ton for Ores formerly sold at $4.25, f.o.b. vessels Cleveland. Purchases aggregating 500,000 or 1,000,000 tons in volume would be no surprise, and are likely to occur within a very few days.

Pig Iron.—The market is in fairly good shape. Bessemers are in some demand; so is Gray Forge. Bessemers vary from $13 60 to $13.70 ℔ ton, with sales confined to small purchases, it is true, but with the inquiries indicating something better later on. Mahoning Valley furnaces are reported as having booked big orders well along into July. The tendency is toward higher prices, and it would be no surprise if they should improve at any time.

Old Rails.—The market is as dull as it could possibly be. We hear of a sale or two of old Americans at $19, but nothing beyond this.

Scrap.—Dealers say the market was never duller. Indeed, this is shown by the quotation of No. 1 Railroad Wrought at $12 ℔ ton. Wrought-Iron Turnings continue at $6 50 ℔ ton, with few orders prevailing.

Muck Bar.—Although the market lacks activity, there is some demand for Muck Bars at $24, and dealers even anticipate better prices later on.

Nails.—Dealers quote Wire Nails at $1.60 and Cut Nails at $1.40 ℔ keg in stock. Prices, however, are not very firm, and there are reports of shading to accommodate heavy buyers.

Muck Bars.—Dealers continue to quote Muck Bar at $24 ℔ ton, delivered at buyer's mill.

Wire.—Although the mills are busy, orders are scattering, with prices fairly well maintained. Galvanized Wire is quoted at $2 45 and Painted at $205, in carload lots.

(By Telegraph.)

There is little new to say to-day regarding the Ore situation. No sales are reported. However, there is a little more disposition on the part of larger consumers to consider limited purchases, enough to cover immediate wants, at least. The lake freight situation, which has a direct bearing on the price and sales of Ore, is a little better; while there is no material change in the situation on the whole, the advanced season makes it better. It is probable that the lowest rates have been reached. Vesselmen and shippers alike acknowledge this. Under these circumstances, then, it is only reasonable to believe that furnacemen must make purchases before long, or else pay the increase that is almost sure to follow when Ore will be in demand.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, May 29, 1893.

The last week in May has been without special features, and as we get nearer to July 1 the uncertainties surrounding the settlement of the labor scales become more pronounced. The first definite news regarding the manner in which the manufacturers and the workmen will come together is contained in the announcement that President Garland of the Amalgamated Association has asked the manufacturers to meet the Conference Committee of the Amalgamated Association while that organization is in convention, and this will probably be done. It is believed that by holding conferences while the Amalgamated Association is in convention, the chances for reaching an agreement at an earlier date than was the case last year will be much better. It can be stated as a certainty that at least some manufacturers do not propose to hold conference after conference, as was done last year before the agreement was reached by which the wages of finishers was reduced 10 per cent. If the first two or three meetings do not indicate that the workmen are prepared to offer a scale that comes something near meeting the views of the manufacturers, a number of concerns will refuse to treat with organized labor and operate non-union, as many of their competitors are doing. The convention of the Amalgamated Association opens in this city on June 6, and if arrangements now being made are carried out, the first conference between the manufacturers and the representatives of the Amalgamated Association will be held a few days after the above date. Bessemer Pig and Billets for June delivery are firm at prices quoted below, while for deliveries after that date nothing is being done. On other lines, the situation is unchanged from that noted last week.

Structural Material.—The past week has been exceedingly quiet, and while a fair tonnage is being called for, it is evident that the attempts made by certain makers to stimulate demand by naming exceedingly low prices have not resulted as favorably as was expected. Of course, the consumption of Beams and Channels this year has been heavier than ever before, but it would undoubtedly have been still heavier had the stringency in the money market not occurred. Prices remain as given last week, and we quote as follows: Beams and Channels, 1 60¢ @ 1.70¢, according to order; Tees, 1 80¢ @ 1 90¢; Angles and Universal Plates, 1.60¢ @ 1.70¢, and Z Bars, 1.70¢ @ 1.80¢.

Plates.—Pittsburgh is credited with being the primary cause of much of the demoralization now existing in prices on Plates, but makers here claim that with their exceptional facilities for production, they can undersell Eastern makers in their own market and still come out with a profit. That this is true to some extent is undeniable, but when it comes to selling Tank Steel at 1.50¢, which Pittsburgh is credited with doing within the past month, it is also evident that when after a contract costs play only a minor part in the drama. No special lots have been closed within the past week, and prices are unchanged, as follows: Tank, 1.55¢ @ 1.65¢ according to order; Flange, 1 85¢ @ 1 95¢; Ordinary Fire Box, 2.20¢ @ 2.50¢; Special, 3¢ @ 3.50¢; Shell, 1.80¢ @ 1.90¢. The above prices on Tank, Shell and Flange continue to be shaded to some extent on large lots.

Ferromanganese.—Prices remain at $58 @ $58.50 for domestic, with only a fair demand going.

Wire Rods.—The situation is unchanged from that of last week. While several inquiries for round lots are in the market, the views of buyers and sellers as to prices are somewhat at variance, and as a result negotiations pending for several weeks have not as yet been closed. We continue to quote Wire Rods at $29.50, Pittsburgh, and, as stated last week, a good order with satisfactory terms would probably be accepted at a slight concession over above price.

Steel Rails.—It goes without saying that business so far this year has been very disappointing, and with the tight money market the outlook for improvement in the near future is discouraging. The chief owner of the local mill while in this city last week is credited with saying that his plant would be operated right along. We continue the quotation of $29 at mill for standard sections.

Muck Bars.—The increased activity among the mills has stimulated demand to some extent, but thus far there has been no improvement in prices. We quote best grade of Muck Bars at $23.75 @ $24, delivered at buyer's mill, and

are advised of a sale of 500 tons at the first-named price for delivery before July 1. Several lots of inferior grades of Muck Bars have recently been sold in this market at a price equal to about $23.50, delivered at buyer's mill.

Wire Nails.—The market does not show any changed conditions over those noted last week. A fair demand is going for small lots, and prices are unchanged at $1.45 for carload lots, Pittsburgh or Cleveland, and $1.50 in less quantities. We continue to quote Cut Nails at $1.10 base in Wheeling district for desirable orders.

Pipes and Tubes.—The active demand for Pipes and Tubes noted last week continues, and the outlook for the next two or three months is very encouraging. Makers advise us that official discounts are being closely adhered to, and the trade, as a whole, is in much better condition at this time than for some months. Discounts are unchanged and remain as follows: Butt-Weld Black Pipe, 57½ %; Butt-Weld Galvanized, 50 %; Lap-Weld Black, 67½ %; Lap-Weld Galvanized, 57½ %. On Boiler Tubes discounts are as follows: 2¼ inch and smaller, 65 %; 3-inch and larger, 67½ %.

Sheets.—The demand continues very active and mills have all they can do to supply product as fast as wanted. As a result prices are firm and tending higher. We continue to quote Common Sheets at 2.50¢ @ 2.60¢ for No. 24, with the usual advance for the lighter gauges. On Soft Steel Sheets $2 ₱ ton on above prices is charged.

Connellsville Coke.—From the Connellsville region comes the information that the large operators have about come to the conclusion to pursue a more aggressive policy toward the smaller operators, and much of the protection that has heretofore been shown them in various ways will be removed. This determination, if carried out, may seriously affect prices, and may eventually result in some of the smaller operators being forced out of the business. For the week ending May 20 there were 11,950 ovens in the Connellsville region in blast and 5377 ovens idle, with a total estimated production for the week of 117,972 net tons. Compared with the production of the previous week, this was an increase of 4975 tons. Prices have not shown any change and we continue to quote Furnace Coke at $1.60 and Foundry Coke at $2.15 to dealers and $2.30 to consumers.

(*By Telegraph, May* 31, 1.30 *p.m.*)

Pig Iron.—The market did not present any new features during the week. Bessemer for June delivery is in very active demand, and a large Steel concern in this city, although large makers of Pig Iron themselves, have made several purchases of Bessemer in the open market during the past week. Pittsburgh furnaces making Bessemer have largely sold up their product for June, and two stacks in the Shenango Valley that have been running on Mill Iron have gone on Bessemer and have sold their output for the next four weeks. A number of steel plants in Pittsburgh and Wheeling district will close down on June 30 for repairs and to arrange the wage scales, and this will reduce consumption of Bessemer very largely for a time at least, and may also have the effect of weakening prices. This dubious outlook is, naturally, preventing much being done in Bessemer for extended delivery. The Spearman Iron Company, at Sharpsville, have recently turned their furnace on Bessemer. Prices were unchanged during the week at $13.50 @ $13.65 Pittsburgh for Bessemer. Gray Forge is slightly improved in demand at unchanged prices. City furnaces claim that they are not shading $12.25 Pittsburgh for Gray Forge, and that if this price is being shaded it is by outside furnaces. We quote as follows:

Neutral Gray Forge	$12.15 @ $12.25,	cash.
All-Ore Mill	12.50 @	"
No. 1 Foundry	13.75 @ 14.00.	
No. 2 Foundry	12.75 @ 13.00	"
Charcoal Foundry No. 1	17.00 @ 18.00,	"
Charcoal Foundry No. 2	16.50 @ 17.00,	"
Bessemer Pig	13.50 @ 13.65.	"

We note a sale of 3000 tons of Bessemer at $13.50, and 2000 tons at $13.60 Pittsburgh, both for close delivery.

Billets.—Steel for June delivery is in active demand, and with only moderate amount to be had, is firm on the basis of $21.75 @ $22, Pittsburgh, with reports of some transactions at even better figures than the last named. Should a protracted shut down largely involving Pittsburgh and Wheeling come on July 1 it will probably result in further advances in prices. The Duquesne Works, with an output of about 1200 tons per day, will probably be able to largely meet the demand during July, which is expected to be light on account of so many of the mills being idle.

Bars.—While there is considerable activity among the mills, both here and in the valleys, it is due largely to the desire to be as well prepared as possible for a protracted period of idleness after July 1. It is the impression that a hard fight will be made this year by the manufacturers to bring down the prices of puddling, especially by the Mahoning Valley mill owners. We continue to quote Steel Bars at 1.52½¢ @ 1.60¢, at mill, half-extras, while in the Mahoning Valley Bars are held at 1.40¢ @ 1.42½¢, half-extras, at mill. The new Bar mill of the Brown Bonnell Iron Company at Youngstown is expected to start up this week. In point of equipment it is claimed to be one of the finest mills in the country and to contain some new features not heretofore employed in the construction of similar mills.

According to the *Railway Master Mechanic* the number of compound locomotives built in the United States up to April 1893 is about 500, made up as follows: The Baldwin Locomotive Works had built or in course of construction 410 Vanclain four-cylinder compounds; the Rhode Island Locomotive Works, 30 two cylinder and nine four-cylinder (Johnston); the Schenectady Locomotive Works, about 40 two-cylinder; Brooks Locomotive Works, 1 two-cylinder and 1 four-cylinder; Rogers Locomotive Works, 1 two cylinder, and Cooke Locomotive Works, 1 two-cylinder compound engine. About 6 two-cylinder compound engines have been built on railroads.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, May 31, 1893.

Pig Iron.—It is reported that the shippers have been notified by the Pennsylvania Railroad that the new schedule of rates goes into effect without regard to previous contracts, a course which may prove very serious to some furnaces and their agents. The market is rather quiet, the only item of special interest being the contract for a large quantity of cast-iron water pipe which is being closed in this city. From Buffalo comes the news that a block of 1000 tons of Lake Superior Charcoal Iron of standard make has sold in that market for $15.50, this probably representing the lowest figure reached in that market. We quote Northern brands at $14.50 @ $15.25 for No. 1; $13.75 @ $14.50 for No. 2; $12.25 @ $12.50 for Gray Forge, tidewater. Southern Iron, same delivery, $14 @ $14.50 for No. 1; $12.75 @ $13.50 for No. 2, and $13 @ $13.50 for No. 1 Soft; $11.75 @ $12.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Only small orders are coming in and the market continues very dull. Quotations remain as follows: $22 @ $22.50 for 10 % and $25 @ $25.50 for 20 % Spiegeleisen, and $57 @ $57.50 for foreign 80 % Ferromanganese.

Billets and Rods.—There is some inquiry for foreign Billets for the re-export Wire trade, the Billets being offered at $28 @ $28.25. We quote, nominally, domestic Billets, tidewater, $23.75 @ $24.25; foreign, nominally, $28 @ $28.50; domestic Wire Rods, $33 @ $34; foreign Wire Rods, $40 @ $40.50, and Swedish Rods, $52 @ $53. There has been some deferring of deliveries on domestic Billets, which is bringing into the market sellers who have been stiff lately. A report is current that a Wire mill in Eastern Pennsylvania has bought a considerable block of Billets at $22.25, delivered, a Rail mill being the seller.

Steel Rails.—The market remains steady at $29 mill or tidewater for standard sections, while it is irregular so far as Girder, Girder Rails and light sections are concerned. We note sales aggregating about 10,000 tons. The Bethlehem Mill, which was closed down last week, has taken orders aggregating a little over 6000 tons, the principal one being for a New England road which availed itself of an option.

Track Material.—Spikes are quoted at 1.85¢ @ 1.95¢; Fish Plates at 1.50¢ @ 1.60¢; Track Bolts, square nuts, at 2.4¢ @ 2.50¢, and hexagon nuts at 2.5¢ @ 2.60¢, delivered.

Manufactured Iron and Steel.—There has been a fair run of business during the week, and figuring is now going on on the Bloomingdale building, which will take quite a considerable lot of Structural Material. A feature of recent bidding has been that mills in the Pittsburgh district have considerably cut into the extras on punching and fitting. In conjuction with the quotation of 1.60¢, Pittsburgh, this lowering in the extras has put prices down to an unprecedented level. A number of fair-sized blocks of Tank and Flange plate have been placed at widely varying figures, Flange having sold down to 2.05¢. We quote: Beams up to 15 inch, 1.75¢ @ 2.00¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.80¢ @ 1.90¢; Tees, 1.90¢ @ 2¢; Channels, 1.85¢ @ 2¢, on dock. Steel

Plates are 1.70¢ @ 1.90¢ for Tank; 1.95¢ @ 2.10¢ for Shell; 2.10¢ @ 2.25¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.60¢ @ 1.9¢, on dock, and Common 1.50¢ @ 1.60¢. Soft Steel Bars are 1.50¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered; Cotton Ties, 80¢ @ 85¢ ₱ bundle, at mill.

Old Material.—We quote: Old Iron Rails, $16.25 @ $16 50, on cars Jersey City, and Old Wheels, $12.75 @ $13.

Metal Market.

Pig Tin.—There have been no signs the past week of relief from the depression in values brought about by overtrading induced by the proposed duty. To the contrary, depression is more pronounced at present than it has been at any time during the past two months. Considerable Tin has been switched on contracts, almost invariably to the advantage of operators, who were bold enough to look matters squarely in the face and trade accordingly, and not a few hundred tons have passed into the hands of jobbers and consumers; but importers still have a burdensome load to look after. Tin has been coming forward too rapidly to be handled satisfactorily under prevailing financial conditions, and the result is an accumulation of 8000 tons or more at this port, against average visible holdings of less than 2500 tons. A week ago 19.30¢ was apparently a very low price. Since then round lots have been sold at 18.90¢ for prompt and near future delivery; also for delivery up to September 1, sellers' option, at the same price, while ordinary jobbing sales were made at as low as 19¢, regular terms. On Wednesday there were importations of 1255 tons, making a total for the month of nearly 5000 tons. This so offset better London advices that prices here ruled very low. Sale were made of 25 tons at 18⅞¢ on the spot, and 50 tons at 18 90¢ for June delivery.

Copper.—The market has not changed for the better. Prices are softer if anything than they were a week ago, and evidence is wanting of improvement in the demand, for home or export account. The offering does not appear to be particularly urgent, yet enough Copper comes upon the market, in small parcels at least, to keep prices leaning more or less in buyers' favor. On Lake Superior Ingot the popular quotation is 11¢, but a shade less has been named on small lots, while speculative operators offered at as low as 10¾¢ @ 10.85¢ for delivery during the latter part of the year. Electrolytic Copper does not bring over 10½¢, except where sold in very moderate quantities and a higher price than 10¢ is the exception for ordinary casting stock. Dealings have been on a very moderate scale and the demand is slow at the present time.

Pig Lead.—Prices have been gradually moving toward a higher plane under the influence of very steady purchases for consumption and comparatively light offering. Probably 500 tons have been placed at 3⅞¢ @ 3.92½¢ for round lots and 3.95¢ for single carloads. The latter price was an inside one at the close, while 4¢ was generally asked. Comparatively little Lead is offered at present for shipment prior to July. Spot stocks are remarkably light.

Spelter.—No change has taken place in the condition of the market for this metal. Renewal of labor difficulties in the Western coal-mining districts tended to stimulate interest for a time; but reports to the effect that the miners decided to turn out enough coal to keep smelting works in operation checked any unusual demand. Prices have therefore barely held their own, at 4.20¢ @ 4¼¢, for prompt and near future shipments.

Antimony.—The demand has continued unimportant and prices remain almost stationary. Current quotations are 9.90¢ @ 10¢ for Hallett's, 10¼¢ @ 10½¢ for L.X., and 10½¢ for Cookson's, in wholesale lots.

Tin Plates.—Dealings have been on a rather small scale, and there is no improvement in the demand for prompt or future deliveries. Prices are rather soft, but without radical change. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., $5.50; Bessemer full weight, $5.50; light weights, $5.10 @ $5.12½ for 100 lb, $5 for 95 lb, $4.90 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75; IX basis, $6.85. Charcoals—Melyn grade, IC, $6.50; Crosses, $8; Allaway grade, IC, $5.70; Crosses, $6.90; Grange grade, IC, $5.80; Crosses, $7. Charcoal Ternes—Worcester, 14 x 20, $5.70; do., 20 x 28, $11.35; M. F., 14 x 20, $7.25; do., 20 x 28, $14.50; Dean grade, 14 x 20, $5.35 @ $5.37½; do., 20 x 28, $10.50 @ $10.70; D. R. D. grade, 14 x 20, $5.; do., 20 x 28, $10.30; Wasters—S. T. P. grade, 14 x 20, $4.87½; do., 20 x 28, $9.25; Abercarne grade, 14 x 20, $4.87½; do., 20 x 28, $9.20.

Coal Market.

The Anthracite Coal trade is just now bracing up and getting into position for the season. The meeting of Wednesday this week is expected to have some bearing on the subject, but, as a matter of fact, the anticipated benefits are already realized in good measure by the excited inquiry on the part of consumers and the approach made to the actual schedule, which in any event is likely to be adhered to for the present, even though the movement be preliminary to shading at a later day. The immediate effect on the market is a relapse, at least so it may be inferred, reasoning from the usual operation of cause and effect. Operators are sure of one point gained through temporary activity and firmer prices.

The production of Coal last week by the several companies, who endeavor to act in concert so far as practicable, was 856,700 tons, which is about the same amount as shipped from the mines last year.

Since January 1 Reading has produced upward of 10,000,000 tons, an increase of 615,000 tons compared with the same time last year, and this despite the large amount lately reported to be in stock.

Bituminous Coal is fast going into consumption. All the producers report an increased output compared with last year. Chesapeake & Ohio is 676,000 tons ahead. Pittsburgh river men have shipped no less than 30,000,000 bushels since the rise.

The Susquehanna extension of the Cambria & Clearfield Railroad, just opened for traffic, taps a rich Bituminous Coal field.

The Wilkesbarre & Eastern Railroad Company are said to be purchasing Coal lands near Parsons, Luzerne County, Pa.

The Ohio Central Railroad has completed arrangements to develop large areas in Jackson County, Ohio, the Coal from which will pass over that railroad.

Financial.

Although money is easy to good borrowers with acceptable collaterals, evidence of stringency among others whose position is doubtful or who may be engaged in large speculative enterprises is constantly cropping out. Signal examples of misfortune from attempting too much at a time when credits are scrutinized are occurring even among prominent men, supposed to be of more than ordinary business sagacity. The latest are ex-Secretary Foster, Robinson of Elmira, Wiman of Staten Island, Weeks of West Superior, and others who might be named, all of whom had important projects in course of development and were liable to be thwarted by any considerable monetary disturbance. Still another and more numerous class of the Dwiggins style have gone down, carrying all associated with them, so that within 60 days as many as 30 so-called "banks" have suspended. But as a whole the disturbance on the Stock Exchange when the industrials collapsed has had very little effect upon legitimate business, aside from exciting a measure of distrust, making it difficult to obtain bank accommodation to the extent that might have been desired. By common consent the course pursued by the banks in this respect is admitted to have been exceedingly judicious. The effects of contraction are more severe in the South and West, where the abundance of money has encouraged speculative enterprises far beyond the limits of prudence. The continued shipment of gold—$4,000,000 to $5,000,000 a week—has the effect to deplete the Treasury reserves, which are again below the $100,000,000 gold line, but no immediate concern is felt on this account. The practical operation of silver bullion purchases affords an object lesson which may have a salutary effect upon Congress when it shall meet. News from Europe indicates that the gold demand may be urgent for some time to come. A counteracting influence may arise from increased exports and diminishing imports, but the purchase and sale of securities by foreigners is an uncertain factor in attempting to forecast the balance of trade.

The stock market has been irregular and lower. On the announcement of the Richmond Terminal plan of reorganization the securities fell sharply because of the large assessment proposed, and on Friday Toledo, Ann Arbor & North Michigan 5 % bonds dropped sharply by reason of a closing out of a loan upon them. The bank failures of the week included the National Bank of Deposit in this city, which, it is said, will pay depositors in full, and the Elmira National Bank, which, it is reported, will prove a bad failure. On Saturday free selling of General Electric and the coal shares carried the whole list downward to about the lowest of the week, notably General Electric and Cordage preferred. On Monday there was a sensational decline in Reading, which sold down to 16¼, attributed to dissatisfaction with the proposed plan of rehabilitation. Electric

again declined, as an officer said, absolutely without reason.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended	99
U. S. 4s, 1907, registered	112¾
U. S. 4s, 1907, coupon	112¾
U. S. currency, 6s	105

Money was easy to good borrowers, but lenders, especially among the foreign bankers, stipulated, as usual, for exceptionally good security and a gold note, and they were unwilling to loan for less than 6 %. Some contracts were reported at 4½ % for 60 days on dividend-paying stocks. Commercial paper continued dull, the city banks, with a few exceptions, being out of the market, and those institutions who bought paper were tempted by the high rates ruling, 6½ % @ 8 % for the best names. The bank return showed a gain of $528,100 in cash, and of $1,017,750 in surplus reserve, which now stands at $25,439,925, the highest since February, 1892.

Loans were contracted about $1,000,000. In the West money is difficult to be had and trade is dull. Country banks are frequent applicants for temporary assistance.

The merchandise markets show but little animation, but traders are inclined to believe that prospects are improved. Grain still droops. Hog products are slow, on account of high prices. Ocean freights are depressed to about the lowest point. Cotton at the close was ⅛¢ lower. Exports large. Coffee higher. Business in dry goods was larger than for many weeks.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, May 31, 1893.

There has been an almost uninterrupted decline in prices of Pig Tin and the market is depressed, owing to lack of American orders and absence of support from local dealers. The low prices at the Banca sale also had an unfavorable effect and even small parcels are difficult to sell, although shipments could still be made to reach America before July 1. On Tuesday there was a decline to £85. 5/ for prompts, or £3 for the week. Wednesday's market showed rather better tone, prompts selling up to £85. 12/6 and three months' futures to £84. 10/.

Copper has also ruled lower and the market still shows a drooping tendency. Transactions have been limited, and there is hardly any outside speculative interest. Rumors of refusal of American producers to renew the agreement to restrict output has little effect upon the market, since present prices are considered extremely low, but speculators are extremely cautious pending developments. Latest sales of Merchant Bars were at £43. 5/ for prompt and £43. 15/ for three months' futures. Best selected English quoted at £46.

Tin Plate has been dull and prices show a downward tendency. Business mostly in squares and odd sizes. Oil sizes are neglected. The demand for Black Plate has fallen off. Stocks at shipping ports amount to about 230,000 boxes. Prices in the Liverpool market are as follows:

IC Charcoal, Alloway grade	13/6 @ 14/
IC Bessemer Steel, Coke finish	12/0 @ 12/3
IC Siemens " " "	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20	12/0 @ ....
Charcoal Terne, Dean grade	13/6 @ 14/

Spelter is stronger under the influence of heavier consumption on the Continent, and prices have advanced to £17. 17/6 for ordinary Silesian.

Pig Lead has been rather slow of sale and prices are still easy, with £9. 7/6 quoted for Soft Spanish.

There are no new features in the Iron trade. Business is slow and prices show very little movement. Late sales of warrants were at 40/9 for Scotch, 34/ for Cleveland, and 44/9 for Hematite. Steel in general is also quiet, with prices leaning in buyers' favor, and Rails quoted down to £3. 13/9, f. o. b.

The German Iron Trade.

(*One mark per metric ton is equivalent to 24.8 cents per gross ton.*)

DUSSELDORF, May 19, 1893.

The condition of the Ore market has not changed lately. Spathic Iron Ore costs $2.60 @ $2.72; Spanish Ore, $3.22, and Best Swedish, $3 47, delivered Ruhr ports. The demand and supply are fairly balanced in Pig Iron, prices being, Spiegeleisen, $12 65 @ $12 89; Siegen Mill Iron, $10 66 @ $10.91; Thomas Pig, $11 40 @ $11.65; Bessemer, $15.62; Foundry No. 3, $13 64; Luxemburg Foundry, $11 90, delivered to consumers in Westphalia.

Steel Ingots are selling at $18.10 @ $18.84; Billets, $19 09 @ $19 59, and Slabs, $19.59 @ $20.33. Iron Bars are held at $27.77 @ $29.01, while Soft Steel Bars are quoted $26.94 @ $29.01. Beams are $22.32 @ $23 56, while Hoops are $32.24. Business in Beams is very active because the use of Iron for building purposes increases very rapidly. Prices for Plates and Sheets remain very low. Ship Plates are quoted $28 52 @ $29.76, and Steel Boiler Plate, $31 @ $32.24; Iron Boiler Plate being held at $34 72 @ $35.96 ℔ gross ton.

The German works making enameled goods have formed a combination, the great majority of the factories having joined. Contracts were signed on May 9 in Berlin, and it is proposed to cooperate with the Austrian combination.

PERSONAL.

A. J. Forbes-Leith of the Illinois Steel Company sails for Europe on the 14th inst.

Andrew Carnegie starts on his usual summer trip to Europe on the 3d inst.

Professor Riedler has begun a series of reports in the *Zeitschrift des Vereines Deutscher Ingenieure* on his American tour. He has dealt, so far, with the New York steam heating plant, the New York Edison stations and the machinery equipment of a number of New York hotels.

Louis Hernsheim, importer of iron and steel, New York, has failed.

Copper in Engineering Construction.

(*From an English Correspondent.*)

The American engineer uses less copper in his constructions than his British *confrère*. At least, so it appears to the writer from observations he has made during more than one professional tour in the United States. In England we are more fond of copper steam pipes with flange joints, and such may be said to be the invariable application in marine engine practice. In British locomotive boilers, too, copper fire boxes are used, and, indeed, warrant the additional first cost from their long period of service and their value as old metal when worn out. In England we have not been so successful with steel fire boxes for locomotives as the American engineers, and probably the fact is due to the greater thickness, which Englishmen too often insist on putting into the tube plates. The question is one that has come to the fore of late, A. F. Yarrow, the well-known torpedo-boat builder, having been, we believe, the first to put the matter on a sound scientific basis, in a paper he read before the Institution of Naval Architects a short time ago. Briefly, his contention is that the unequal expansion and contraction of the two sides of the plate, owing to the different temperatures of the water side and the fire side, causes distortion of the holes into which the tubes of the boiler are expanded. With the thin plate the effect is naturally less marked, but with the higher heat conductivity of copper a thicker plate can be used without the evil effect being apparent than if iron or steel be the metal employed. In regard to steam pipes the question, the writer believes, is very largely one of conventionality. To have iron steam pipes is looked on as a very "cheap job," and would condemn the whole boat with the majority of people. A practical point, however, is the greater ease of fitting with copper pipes, but since higher pressures, and the consequently greater temperatures of steam, have come into use, we in England have paid rather highly for our adherence to the more costly metal, steam pipes having burst on one or two occasions with fatal results. These misfortunes have attracted the attention of engineers to the metallurgy of copper in the same way that disasters with boiler plates forced on our attention an investigation of the influence of various alloys upon iron in the manufacture of steel.

The literature of the subject has recently received an important addition in the shape of a report made to the Alloys Research Committee of the Institution of Mechanical Engineers, by Professor W. C. Roberts-Austen of London. These research committees are a prominent feature in the economy of this institution. They were inaugurated a few years ago and have done excellent work. There have been research committees on riveting, on friction, on marine engine trials, on the steam jacket, and lastly on alloys of metals. The practice is for the council of the institution to nominate a number of those most acquainted with the subject under investigation, and the committee thus formed proceeds to make an extensive inquiry into the subject, proceeding by experiments and deduction. The chairman of the committee makes a report, which is read

at a general meeting of the institution, and is discussed in the ordinary way, as if it were a paper. Sometimes the committees get some pretty hard knocks, for those members who are not nominated on the committee, and think they ought to have been, are not shy in drawing attention to any weak points they may discover. In this way the subject is pretty effectively threshed out, especially as it is usual for each committee to present three or four reports in the course of the investigation, so that critics have time to prepare their attack and sharpen their weapons.

Professor Roberts-Austen's reports in connection with the alloys research have not escaped the usual fate, but the criticisms have turned largely on matters more essentially of a theoretical nature, such as the allotropic state of iron, a theory which Professor Roberts-Austen has adopted and which was introduced by M. Osmond of Paris. The report read lately by Professor Roberts-Austen was the second presented by the Alloys Research Committee, the first report having been published 18 months ago. The first report was largely introductory, and though of considerable importance and interest it did not contain any very definite conclusions bearing upon the practical results of engineering construction. The subject of the alloys of metals has been so inadequately treated from an engineer's point of view, except in the case of alloys of iron and steel, that it was found necessary to lay down certain principles, and these can only be put on a satisfactory basis by means of experiments with a metal that could be treated without the disturbing element of oxidation. For that purpose gold was selected, and engineers were a little exercised in their minds at finding so much attention given to a metal which certainly does not enter into the construction of their productions. The author of the report has, however, justified his procedure, and it is now apparent that in order to put the inquiry on a satisfactory basis it was necessary to take the course he adopted.

The second report deals principally with copper and the manner in which it is affected by the various alloys that are mostly associated with it. Arsenic is the first dealt with. We think that in the minds of most engineers there has been an impression that the purer a copper the better. Of course it is generally known that pure copper is very soft, although there is a modification in the molecular structure produced by work put upon the material. Roberts-Austen now shows us that there is a further consideration; and he is of the opinion, which opinion is strongly enforced by observed data, that copper, like iron, may exist in an allotropic state. The effect of arsenic on copper was shown during the reading of the report by means of diagrams on which curves were plotted, giving the various factors. A series of four rods was carefully prepared of pure copper alloyed with 0 2 per cent. of arsenic. At a temperature of 64° F. the tensile strength was 30,150 pounds per square inch on the original area of the test piece, the elongation being 30 per cent. In order to ascertain the effect of temperature on copper alloyed in this way, tests were made at advancing temperatures. At 214° F. the tensile strength rose to 30,880 pounds, the elongation being still 30 per cent. At 291° F. the strength was still higher—30,960 pounds to the square inch, but the elongation fell to 21 per cent. At the higher temperature of 486° F. the strength fell off to 28,730 pounds to the square inch, but the percentage of elongation again rose to 30 per cent. The test pieces, it should be stated, were carefully worked and annealed before use. In some other test pieces of copper containing 0.5 per cent. of arsenic, also worked and annealed, the tensile strength on 64° was as high as 33,420 pounds, with an elongation of 37 per cent. The figure is certainly remarkable, considering that specimens of pure copper, hammered and rolled, when tested at 59° F. gave a percentage of elongation of but 27 per cent. and a strength of 29,600 pounds. Some tests were made with an alloy very rich in arsenic, containing 1.5 per cent. At 59° F. the tensile strength was 26,460 pounds, with an elongation of 20 per cent. At 586° the specimen broke immediately at a stress of 5030 pounds to the square inch. The experiments clearly show that, although arsenic has a very deleterious effect when in excess, it is by no means to be avoided in moderation, and it appears safe to conclude that the superior strength and ductility of copper is maintained at the temperatures attained by the plates of fire boxes of locomotives, while the alloy gives the metal superior hardness.

Perhaps the most instructive point of the report is that which refers to the investigations in the matter of bismuth, because it is a metal the influence of which has been comparatively little understood not only by engineers, but by metallurgists as well. Test pieces were prepared from very pure copper, having 0.1 per cent. of bismuth added. At 59° F. the tensile strength was 18,020 pounds to the square inch, the elongation being 20 per cent. At 214° F. the strength fell to 11,510 pounds, the elongation being 15 per cent. At 324° the tensile strength fell to 5620 pounds, the elongation being 12 per cent. At 390° the strength was 3860 pounds. At 520° F. it was 4940 pounds. In both these tests the specimen broke abruptly without elongation, while at 558° F. the tensile strength was no more than 2270 pounds to the square inch. The figures are eloquent as to the effect of bismuth in reducing the strength of copper, especially in positions where a high temperature is applied. The report states further that the prejudicial effects of bismuth did not vanish even though but a trace be present. For instance, in one specimen where there was but 0.002 per cent., although the material was strong, the elongation was very small. The fact is one of additional interest, because arsenic, antimony and bismuth all belong to the same family, of which nitrogen is a type, although the atomic volume of bismuth is higher than of arsenic or of antimony; and, according to the "periodic law" of Newlands and Mendelejeff, has mechanical properties—"the properties of the elements are a periodic function of their atomic weights." This law was adopted by Roberts-Austen, and largely forms the foundation of his researches. It would take too much space to explain its bearing here, but some remarkably interesting physical phenomena were introduced in the report by the author in illustration of its principles.

As a practical example of the principles laid down in the report, an analysis was made of a copper fire box plate taken from a locomotive, and which had possessed remarkable endurance, having been in use for over 20 years, and had covered 500,000 miles in running. The copper was by no means pure, there being but 98.7 per cent. of the metal present. Of lead there was 0.4085 per cent.; of arsenic, 0.3726 per cent.; of antimony, 0.034 per cent.; of bismuth, 0.0360, and of nickel, 0.3039 per cent. The oxygen shown by analysis was 0.0181 per cent. It is difficult to give a satisfactory explanation of the excellent qualities of this plate, but the work of Andre le Chatelier, as quoted by Professor Roberts-Austen, has shown that at 750° F.—a temperature which is readily obtained in fire boxes of locomotives—pure copper is singularly liable to disruption, while it is well known among locomotive engineers that the older brands of copper afford better material for fire boxes than the more modern descriptions, in which copper is much purer, owing to improved methods of smelting, largely the outcome of the purer copper demanded for electrical purposes. The effect of the presence of small quantities of foreign elements, such as aluminum or nickel, increases the endurance of the copper by rendering it less ductile, for the very ductility is a source of danger, the deformation produced by successive expansions and contractions serving to cause distortion of the plate.

In the discussion which followed the reading of the paper a very important point was brought out by Dr. David Watson, the manager of one of the largest copper manufacturing firms in England, namely, the Broughton Copper Company of Lancashire. This point was the action of oxygen, as affecting the influence of alloys. He stated that the influence of impurities on copper in the oxidized condition in which it is ordinarily used by engineers is in some cases different from the influence when the copper is deoxidized. Almost all wrought copper in the world, he said, contains lead and has at some stage of its manufacture been worked at a red heat. Copper containing even a minute proportion of lead—0.05 per cent. or less—if deoxidized, is quite incapable of being worked hot. In the same way arsenic does not increase the strength of deoxidized copper, but it adds to that of oxidized copper; while bismuth behaves toward oxidized copper in precisely the same way as to deoxidized copper, producing a hot rottenness, as shown by the figures we have quoted from Professor Austen's report. The point is an important one, and is worthy of every attention at the hands of engineers; for, up to the present, as Dr. Watson says, the proportion of oxygen which ought to be present in copper containing various impurities, in order to confer on the metal the very best properties, has not been successfully shown, although much experience and many comparisons of analyses with tensile and other tests show, according to Dr. Watson—and we could have no better authority—that the most satisfactory copper for the ordinary purposes of the mechanical engineer contains arsenic, say from 0.35 per cent. upward. The practice of the Broughton Copper Company is to make the upper limit about 0.5 per cent., but copper containing more than this may be of excellent quality.

Further particulars have been received from the officials of the South-west Africa Company in Damaraland with regard to the recent discovery of a large copper deposit north of Otavi. They describe it as the finest mineral outcrop they have ever seen, the survey giving a length of 500 to 600 feet, a hight of 40 feet and a breadth of from 20 to 30 feet. The district is rich in copper associated with argentiferous lead ores.

HARDWARE.

Condition of Trade.

THE ADVANCE of the season and the general prevalence of good weather have the effect of stimulating business somewhat, and jobbers in many parts of the country, while not doing an especially heavy business, are fairly occupied. The demand, however, is not up to their expectations. Buyers are evidently pursuing the careful policy of purchasing only for early requirements, and the difficulty which is experienced in making collections and the condition of the money market tend to diminish the volume of business, making merchants very conservative in placing orders. Retail business throughout the country is, however, in good condition and an enormous amount of goods are going constantly into consumption. Stocks in retailers' hands, and also with some of the jobbers, are regarded as exceptionally light. There is little to note in regard to the tone of the market in the matter of prices. No improvement is noticeable and in some lines there are indications of weakness. Collections are somewhat better than they have been, but there is still a good deal of complaint in regard to them.

Chicago.

(By Telegraph.)

The Shelf Hardware trade is steadily improving. Orders are more numerous, and jobbers are again feeling in better spirits, although they are of the opinion now that they will not make up the trade they have lost and that there will be a poor year on the whole. The demand for seasonable goods is the special feature. Staple goods are not moving very freely. Builders' Hardware is only moderately active. Very little benefit has so far been felt from the opening of the World's Fair. Visitors are coming here from further West, as was expected, and they are calling to see the jobbing houses whose goods they may have handled for years without seeing any other than traveling representatives, but when they call it is for social purposes, and not to place orders to any extent. Prices are steady, except Wire Cloth, which has been put up to 2 cents all around, with very light stocks on hand. Collections are not improving, as farmers are reported to be too busy in the fields to pay merchants what they owe them. Heavy Hardware has done well this month, but the prospects for June are not bright, as manufacturing consumers report their trade falling off in consequence of the tightness of the money market.

St. Louis.

(By Telegraph.)

Continued improvement in the weather has resulted in a steady increase in the number of orders received by Hardware jobbers, particularly so far as Shelf goods are concerned. There is a rush for summer goods from dealers who allowed their stocks to run down on account of the dullness caused by the wet weather, and jobbers have their hands full in shipping Screen Doors and Windows, Garden Tools, Wire Cloth, &c. This latter article continues to be quoted at from 1.75 cents to 2 cents per foot, and even at this price those who have large stocks are unwilling to sell it too freely. Wire Nails are weaker, as is also Barb Wire, and some low prices are reported for both articles. Country dealers are feeling the closeness of the money market and are regulating their purchases accordingly, and as jobbers are scanning orders very closely, a conservative business is the natural result. Prices generally are well maintained, but occasionally a line of goods is offered at prices that go far toward demoralizing the market. In these times, however, money and not goods is what is wanted, and the only way to get the former quickly is to sell the latter, and to do so prices are generally shaded. Collections are beginning to improve, and it is hoped they will continue to do so.

Cleveland.

THE W. BINGHAM COMPANY.—The conservatism of buyers noted in our last still continues, but the present condition of the money market is a good feature of the trade. Orders while not large have been plentiful and for the past two weeks the volume of business has been good, season goods particularly being in brisk demand. Wire Cloth is still very scarce and commands 2 cents in this market. Wire Nails have "slumped" off 5 cents per keg during the past week, and are not strong at that. Wire of all kinds is in good demand at fairly firm prices. Collections are fair.

New Orleans.

A. BALDWIN & CO.—Business is becoming very quiet in this section in all lines and most of the jobbers are busy taking stock, as July 1 closes the year, and they all seem to have settled down to the ordinary summer business.

Baltimore.

CARLIN & FULTON.—This city depending for the largest portion of its trade upon the Southern market, it is but natural to expect from now until possibly the first of August comparatively dull times. In the meantime, inventories will very generally be taken and the results of the year's business for better or worse ascertained.

With the dullness which now prevails it is almost useless to attempt to force sales beyond the actual requirements of the season, for the expense exceeds the profit, especially now when every buyer throughout the country is wisely disposed to be conservative and careful in his purchases and not anticipate his wants through the temptations of seemingly low prices and liberal terms. The stagnation of trade and the stringency in the money market are coincident, and while the former in certain sections of the country may result from the latter, yet under the most favorable circumstances we could not expect an active demand from the South for goods at this time of the year, as the months of June and July have always been the dullest of the year.

It is undoubtedly a fact that stocks in the hands of the retail trade are generally smaller than ever has been known before and it is also noticeable that with the present financial conditions manufacturers are endeavoring to have no heavier stocks proportionately than their customers, consequently any unexpected or brisk demand for goods invariably results in slow execution of orders and should trade take any sudden start it would be impossible to secure early shipments unless production should rapidly increase. This has been the experience of the trade this year with Barb Wire and Wire Cloth and Screen Doors; and Carriage Bolts are not much better.

Boston.

BIGELOW & DOWSE.—The volume of business is still large and in excess of previous years. Orders are well assorted, and customers are in a hurry for their goods. Prices are being well maintained, and there is less disposition to make concessions to secure orders. This market is very short of Wire Cloth, and there is but poor prospect of this condition being improved. The ruling price is 1.60 to 1.65 cents. Wire and Cut Nails are being sold at reduced prices.

There has been some falling off in remittances since the middle of the month, but the retail dealers are doing a lucrative and satisfactory business and are in a sound financial condition. This condition must be strengthened

and improved by the Hardware Association, which was lately formed, and which is rapidly increasing its membership throughout New England.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The production and distribution of Hardware since January 1 has no doubt equaled in volume that of the same five months of any preceding year. It will be remembered that the impetus was given to trade early in January, or perhaps it would be better realized to say there was an uninterrupted continuation of the unusual volume of trade of 1892, which all business men will concede has never before been equaled.

There were exceptional cases, as there always must be, where, from local causes, trade conditions were interfered with, but as a rule the prosperity was universal, and a hopeful feeling for the future existed in January to the extent that salesmen found ready buyers, and customers fair to good bank balances.

Manufacturers had scarcely time to replenish their broken stocks in January when jobbers demanded their goods, and, as the year had opened without any large stocks on hand, it was with great difficulty that jobbers got their stocks in shape to supply the immediate demand. The consequence was many shipments were made leaving some goods back upon their order books unfilled. This always causes dissatisfaction to customers, who, as a rule, cannot realize that their wants cannot always be anticipated, and frequently any goods remaining back for shipment a few days later are the very goods wanted first. Then comes a letter on the subject, frequently harsh in tone, an apologizing letter in return, which is profitable to Uncle Sam, employment for the stenographer and typewriter, and work for the heads of departments and clerical force. But, to sum the matter up, "season goods" have all been scarce.

How many apologizing and explanatory letters have been written concerning delays on Wire Cloth alone it would be difficult to estimate. A recent visit of our buyer to the manufacturer of Wire Cloth developed the fact of untouched letters and telegrams two feet high, and reasons were then quite understood why neither our letters nor telegrams were answered. They simply did not employ clerical force enough to further enrich Uncle Sam and the Western Union by answering their correspondence.

Now, when we take into consideration that large buyers alone communicate with these manufacturers, we can form some estimate of the jobbers' correspondence where goods go direct to the customers, yet customers can form some idea of the efforts of jobbers to answer correspondence when we state that one day last week, from curiosity alone, the lads who have charge of copying letters, after concluding their day's work, counted the number of letters from the hands of stenographers that particular day, and found that between 500 and 600 letters had passed through the copying press. This did not include letters coming under the head of financial matters and remittances. One can therefore imagine the work of investigation prior to dictating to stenographers this number of letters.

The Lawn Mower season has been an exceptionally good one, and, with the largest capacity of any factory in that line in the world, we were ourselves behind on Lawn Mowers at one time a quantity equal in number to the entire yearly production of any one manufacturer of Lawn Mowers ten years ago.

Manufacturers of Garden Tools in our immediate vicinity were also far behind their orders in the hight of the season, which caused great dissatisfaction to customers.

Manufacturers of Barb Wire and Wire Nails were slow in making shipments and manufacturers of Edge Tools were behind their orders; so it has been to either a greater or less extent with other manufacturers through the country.

With this experience, who can solve the question of why so many manufacturers do not find the efforts of their work profitable? It is not sufficient to answer that the curtailing of banking credits and the closer scrutiny of financial risks is the cause of recent failures, nor is it sufficient to say that the present uneasiness concerning our future monetary conditions has caused these recent failures. One cannot eliminate distrust from the banks, whence one seeks accommodations, when these institutions can see no profit in one's business.

The facts of the case are these: Business has been done on too small a margin of profit, and the profit of both manufacturers and jobbers has been largely overestimated by the theorists, who know nothing of the practical conditions of trade. No! manufacturers in this country are not the robber barons that theorists would have us believe.

The practical solution of the problem is that many of the heads of establishments are entrusted with the financial departments alone, and to superintendents are frequently given the difficult problem of the estimated cost. These superintendents are expected to render an estimate of cost of production which will show a profit at the price at which competitors sell, not for a moment suspecting that such prices may have been made, perhaps through an underestimate by a competitor of all incidentals.

It is a little on the principle of a salesman making prices for the firm he represents, to sell his goods. The salesman knows nothing of the exact cost of doing business, which must necessarily be added to the cost of his goods if he desires the balance to show on the proper side of the ledger at the expiration of the year.

This strong competition, therefore, together with the increased volume of trade during the last two years, has induced manufacturers to expand, believing that with increased facilities and double the production, for which they may find an easy outlet, the cost of production would be reduced to the lowest minimum point.

With every confidence for the future, with credit sufficient in prosperous times to raise any amount of money necessary to extend their works, they have acted as above.

The question is, what has caused this distrust and what has brought this cloud over the clear blue sky of a few months ago? Evidently the lack of confidence is at the bottom of it. Now, what is the cause of this lack of confidence? Let each one try to solve this question for himself. We only know that it is upon us and that it would be well for the interior merchant for the present to be cautious in extending his credits, especially where uncertain enterprises call upon him for goods, keep his accounts well in hand, and keep his purchases paid for. This may prevent sleepless nights and it may preserve an honorable business record.

The suspension of four large Iron and Steel manufacturers in our own State would not have occurred had it not been for the loss of confidence and the hesitancy to extend aid to industrial and mercantile enterprises, since which time we have seen the tottering and at last the downfall of several who have heretofore stood high in financial credit.

The failure of Foster & Co. of Ohio is practically a commercial failure, although other interests are involved, caused by an extended business, and inability to raise money when banks are compelled to hold their reserve well in hand. The tottering and failure of banks should have this suggestion to interior merchants: to make every effort to collect their bills, and have a clean ledger by paying their accounts, instead of keeping the money in banks when they have accounts due or coming due.

Collections are, naturally, not up to the standard.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—The change to warm and pleasant weather has been most grateful to business men in all lines. Good weather is always welcome, and its reviving influences seldom fail to make an impression on business.

Reports from different sections of the territory west of this market indicate that there have been rains in nearly all parts, and that the fears of a drought are removed for the present at least. These conditions should, naturally, sustain the confidence of the retail trade and exert an influence to hold up the volume of business.

According to the reports of grainmen, there is still a very large percentage of last year's corn crop in the hands of producers, and with another

good crop this season Nebraska could not help but experience a most prosperous season.

While the financial conditions prevailing in some sections of the country are naturally disquieting, they do not appear to have produced any apprehension in this section, as the causes are too far removed to have any local bearing.

Collections are fair, and merchants generally are meeting their obligations with reasonable promptness.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—Trade for May has been satisfactory. Retailers are showing their good sense by careful and conservative buying, placing orders for immediate wants only. This necessitates frequent buying, but it enables the dealer to keep his stock cleaner and more attractive, with less liability to overstocking on seasonable goods, which, if not sold at a certain time, he is compelled to carry over for another year. Nails and Barb Wire are selling well in small lots at slightly reduced prices, but few carload buyers are in the market at present. Wire Cloth is going at the advanced prices. Seasonable goods, such as Lawn Mowers, Garden Hose, Steel Goods, Guns, Builders' Hardware, &c., are in good demand.

June 7, the celebration of the opening of the Great Northern Railroad from St. Paul to Puget Sound, will be celebrated in this city in grand style. Almost every city on the line of the railroad will be represented. The opening of this new transcontinental line is an event that richly deserves to be honored by St. Paul. The Great Northern Line furnishes not only another route to the coast, but it also opens up to St. Paul a great scope of valuable territory for its course, and it will prove one of the valuable feeders for our city. The building of a transcontinental line of itself is a gigantic undertaking. With 2000 miles of road, mainly through an undeveloped country; with great mountains and rivers to be crossed, and with all the other difficulties that railroad engineering ever meets to be overcome, and this stupendous work to be accomplished in the short space of but little over three years, it would seem as if little more could be said to impress the reader with a due sense of the magnitude of the enterprise.

But the most wonderful fact connected with the construction of the line is that it has been completed wholly without the aid of the Government; not a dollar of subsidy nor an acre of land grant has been furnished by Uncle Sam. The road has been built by the Great Northern Railroad Company from funds furnished by themselves.

This achievement in the building of a great railroad line is due largely to the exceptionally high qualities of the president of the road, J. J. Hill, whose work at the head of one of the great railroad corporations has stamped him as a man of capacity far beyond that of the ordinary railroad president. His home during all his active business life has been at St. Paul, and he is most closely identified with her interests, which makes it peculiarly fitting that St. Paul should make the coming celebration one never to be forgotten in the history of the city and of the Great Northern Railway.

Portland, Ore.

CORBETT, FAILING & ROBERTSON.—The volume of business shows no increase as the season advances. In fact, it would appear that the jobber is better off who does not push his goods on to unwilling buyers. Money is working closer all the time, and the outlook is that we have not yet seen the worst. Collections are still in statue quo, and many a large balance due on last year's purchases remains unsettled.

The crop prospects in this entire territory are still good, and as prices promise to be better than for the last crop, our fall trade should show an improvement.

Prices still show a downward tendency, as is to be expected while trade is quiet.

Notes on Prices.

Cut Nails.—The Cut-Nail market is in an unsatisfactory condition as viewed from the manufacturers' standpoint. The demand is moderate and shows no sign of increase, and at the same time there has been a weakening in prices, which are now represented in the East by the quotation of $1.05 for carload lots at mill. Rumors are current also that this figure has been slightly shaded. Some concessions in price have also been made in the West, but in that section the market is regarded as in a better condition than in the East. Small lots from store in New York are held at $1.35 to $1.40.

Chicago, by Telegraph.—Some activity was stirred up in the Steel Cut-Nail trade by the efforts of outside manufacturers to capture business here. Their inducements may have caused concessions to be made by local manufacturers when in direct competition, but on regular business the price of $1.25 on factory lots is maintained. Generally speaking, this branch of trade is rather quiet. Jobbers quote small lots from stock $1.35.

Wire Nails.—The condition of the Wire-Nail market referred to in our last issue continues, with a further weakening in tone. The price is now fairly represented by the quotation of $1.45 for carload lots at mill, but intimations are made that this figure has been more or less freely shaded. The volume of business is fair but not heavy, a good many of the large buyers having still a stock of Nails purchased at former figures on hand.

Chicago, by Telegraph.—Inquiries for Wire Nails have improved, and some buyers ask for prices on deliveries running into the fall months. Manufacturers are, however, not generally quoting for delivery after July 1, when they expect a general shut down. Some concerns are accumulating stock in anticipation of that event, so that they can supply their trade. Others, however, are trying to move their stocks, evidently preferring to have the cash in hand rather than in goods, for which there may or may not be a demand. Regular price on factory lots is still $1.50 Chicago. Jobbers report but a moderate demand at present, with small lots quoted at $1.65 to $1.70, with concessions to best buyers, while carloads are selling at $1.55.

Barb Wire.—Barb Wire continues to be quoted at $2.45 to $2.50 for Four-Point Galvanized in carload lots at mill. The demand is moderate but prices are in general regularly maintained. Small lots delivered in New York are quoted at $2.70 for Galvanized and $2.30 for Painted.

Chicago, by Telegraph.—Barb Wire manufacturers report their business considerably better, going so far as to characterize it as satisfactory. Buyers seem to think that prices ought to be lowered, but so far have apparently made no impression on sellers, who continue to quote carload lots of Painted at $2.20, and Galvanized at $2.60. Small lots from stock are held at $2.30 and $2.70 respectively.

Detective Racket Alarm.—The Portable Alarm, a description of which appears in this issue, is offered by the Racket Alarm Company, 107 Chambers street, New York, and is sold at $9 per dozen, less 40 per cent. discount.

The Christy Knife Company.—The following is the price-list of the Christy Knife Company, Fremont, Ohio, terms, net 30 days, 1 per cent. discount 10 days:

	Per dozen.
Christy Knives (Bread, Cake and Paring. Set. No. 1)	$6.00
Christy Knives (Bread, Cake and Paring. Set No. 2)	6.00
Christy Table Knives (set of six Knives)	6.00
Christy Bread Knife	3.00
Christy Cake Knife	2.00
Christy Carving Knife	3.00
Christy Paring Knife	1.00
Christy Meat Saw	3.00

Timbale Iron.—Union Mfg. & Plating Company, Freeport, Ill., are manufacturing this article, an illustrated description of which appeared in a recent issue. The Timbale Iron is sold to the trade at $5 per dozen.

Horseshoer's Anvil.—The Fisher Horseshoer's Anvil with detachable Vise, recently described in *The Iron Age*, is made by the Eagle Anvil Works, Trenton, N. J. The retail price to the trade of the 170-pound Anvil with vise attachment, treadle, &c., complete, is $16.

Improved Lawn Mower Attachment.—This attachment, which is manufactured by Jno. W. Bell & Co., Mercer, Pa., was described in our columns in a

recent issue. The attachment complete is sold to the trade from the following list, which is subject to a discount of 25 per cent.

For 12-inch Lawn Mower	$1.75
" 14-inch " "	2.00
" 16-inch " "	2.25
" 18-inch " "	2.50

Mrs. Potts' Sad Irons.—As announced in our last issue, the Enterprise Mfg. Company, Philadelphia, have withdrawn their former list prices, terms, conditions, &c. on Mrs. Potts' Sad Irons. The following net prices of the goods are now announced:

No.	In lots of 25 dozen sets at one shipment.	In lots of less than 25 dozen sets.
50, per set	$0.78	$0.86
55, "	.73	.81
60, "	.90	.98
65, "	.82	.90
550, (containing No. 82, 90, and Set. No. 50 Irons)	2.35	2.50
555, (containing No. 87, 95 and Set No. 55, Irons)	2.20	2.35

Handles in lots of 25 dozen are sold at $1.30, and in lots of less than 25 dozen at $1.50. The lots of 25 dozen sets of Irons may be assorted, if desired, as follows: Nos. 50, 55, 60, 65 and outfits 550 or 555, each outfit (No. 550 or 555) counting as one set.

Rivets.—The American Screw Company, Providence, R. I., and Atlas Tack Corporation, 508 Sears Building, Boston, issue circulars giving revised quotations on second quality Rivets. The American Screw Company continue to quote their Norway Iron Rivets at discount 60 and 10 per cent., but name 70 per cent. discount on Bay State Rivets if ordered in quantities to warrant their manufacture. Similar quotations are announced by the Atlas Tack Corporation, as follows:

Norway Iron Rivets.

	Per cent.
Belt, with Burrs, Bettina brand, coppered, tinned or black	50 and 5
All other kinds and Burrs	60 and 10

Second Quality Rivets.

If ordered in quantities to warrant their manufacture — Class B brand	70

Slaw and Kraut Cutters.—Tucker & Dorsey Mfg. Company, Indianapolis, Ind., are selling their Slaw Cutters at the following net prices:

	Per gross.
1 knife	$21
2 "	30

Kraut Cutters are sold at a discount of 40 per cent. from list.

W. & B. Grass Catcher.—Whitman & Barnes Mfg. Company, Akron, Ohio, are selling their W. & B. Grass Catcher to the trade at $9 per dozen.

Tornado Tank Pump.—Irving W. Fox, Rochester, Minn., is manufacturing this article, a description of which recently appeared in our columns. The price on this Tank Pump to the trade, without hose, is $9.

Crystal Valve Oil Can.—Star Mfg. Company, Canton, Ohio, are manufacturing this article, a description of which appeared last week. The Oil Can is sold to the trade at $4 per dozen.

Yale and Gem Casters. — M. B. Schenck & Co., Meriden, Conn., for whom Wm. H. Jacobus, 90 Chambers street, New York, is agent, have issued a new catalogue of their Yale and Gem Casters with illustrations and list prices. It is accompanied by the following discount sheet, terms 60 days, 2 per cent. discount for cash in 10 days, f.o.b. Meriden:

	Per cent.
Yale Casters	45
Gem Casters	70, 10 and 5
Gem Truck Casters	60 and 10
Gem Polished Brass Casters	70 and 10
Gem Fox Stem Casters	10
Gem Fox Stem Casters, Polished and Plated	Net
Gem "F. B."	Net
Gem "F. B.," No. 2	Net
Rugby Casters	Net

Glass.—Jobbers complain of a lack of demand for Window Glass and of the difficulty with which collections are made. Trade has not increased with favorable weather for building, nor does the nearer approach to the time for closing down factories seem to encourage the placing of orders. On the other hand, reports from factories indicate that Glass is moving in satisfactory quantities. Recent wind storms and hail in some sections of the West have stimulated the demand for all kinds of Glass thus destroyed. The gradual shutting down of Window Glass factories, burning of others and the failure of still others will have a tendency, with the aid of the National Window Glass Company, to keep prices at the present figures. No improvement in the imported Glass market is noticeable. The stock of Plate Glass is largely in excess of requirements, and it has been intimated that a protracted shutdown of Plate Glass factories may be decided upon. Quotations remain unchanged, as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17½ cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7½ per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

Export Notes.

THE BRITISH MINISTER in Chili gave, a short time ago, some practical suggestions to British manufacturers desirous of extending their trade with South America, which will apply equally to those of the United States. The suggestions were as follows:

1. The study of Spanish in commercial schools.
2. The adoption of the metric system of weights and measures.
3. The issue of illustrated catalogues in Spanish; prices may be quoted in sterling, but weights and measures must be according to the metric system.
4. Each manufacturer should issue a telegraphic code arranged for his own special line of goods.
5. The study of the individual wants of each country, and the manufacture of special lines suited to its market.

The New Zealand Government is considering the recommendation of the special committee appointed to inquire into the best means of developing the industries of the islands, that the present prohibitive duty on special machinery should be remitted. This duty is said to make it impossible to introduce many kinds of industries. Engine fittings, patented machinery, and all special machinery not manufactured in the colony, for any industry whatever, is asked to be admitted free. It is likely this demand will be conceded.

A representative of one of the leading English firms in Chili says that the Spanish population in that country are very particular about what are frequently quite trivial matters, such as the size of a package, the color of a label, the markings of certain goods, &c., and that it sometimes happens that goods are sold at a loss because attention has not been paid to these minutiæ. Taking Linseed and Lubricating Oils as an example, he remarks that these are put up in 5-gallon drums, the small package adding greatly to the cost, but if they were put up in 10-gallon drums or 40-gallon casks they would remain unsold, and would ultimately have to be repacked in the above-named size. He recommends manufacturers to employ a resident agent when desirous of introducing goods into the Chilian market, in order that they may steer clear of loss and inconvenience in these and other respects. Such an arrangement, too, facilitates the terms of payment, which it is often a difficult matter to arrange otherwise.

Rogers & Hamilton Company's New York Office.

THE ROGERS & HAMILTON COMPANY, Waterbury, Conn., New York office 19 Murray street, have recently placed a handsome and commodious sample case in their quarters in this city in which to properly exhibit samples of their full line of Crown Hamilton and other silver-plated Flat Ware. The case is 20 feet long, of polished mahogany, the panels being in choice knurly mahogany, making a decided contrast, while harmonizing with the plainer wood. There are four large balanced sashes fitted with plate glass, which can be raised when desired. The interior of the upper portion is fitted with numerous shelves for the proper display of the goods, the whole being upholstered in black cloth to give a suitable background. At the top in front, on the inside, is concealed a row of incandescent electric lights, arranged as in galleries where paintings are shown, which are controlled by a switch at the left, outside. The main portion of the case contains sets of Flat Ware in plush cases, Carving Sets, &c., and also a line of high-grade Hollow Ware, which they are offering in connection with the Flat Ware, principally for

hotels, &c. The bottom of the case contains three tiers of drawers, some of which are lined with a rich purple silk plush. Here is shown the entire line of Flat Ware, individually, each pattern and size, with the numerous finishes.

World's Fair Exhibits.

GLENNON & KRAUSE, 2843 Indiana avenue, Chicago, are exhibiting their Lawn Mower's Partner, or Grass Carrier. Included in the display is a reproduction of the Carrier, which is made of green satin, lined with orange satin, the inside and bottom of sack being worked with silk in flowers. The outside is bordered with oak leaves at the top, and the bottom has a border of grass and clovers, all worked in different colored silks. The exhibit is located in the north end of the Horticultural Building, directly opposite the entrance to the fruit department.

LANSING WHEELBARROW COMPANY, Lansing, Mich., are located in Section A, Transportation Building. They advise us, however, that having found the space allotted to them in this building too small to satisfactorily show their goods, they have, in connection with several manufacturers of Agricultural Implements, opened a sample room at 600 South Morgan street, Chicago. The exhibit at the fair is in charge of Bliss Stebbins, W. C. Barker of New York, having charge of the exhibit at the sample room.

CLEVELAND HARDWARE COMPANY, Cleveland, Ohio, have in Gallery B, Transportation Building, an exhibit of all the different specialties they manufacture in rolled steel Wagon and Carriage Hardware. The company claim that they now make the largest line of rolled steel Wagon and Carriage Hardware in the country and are the only manufacturers of this kind of Carriage Hardware.

THE EXHIBIT OF REED FURNITURE AND BAMBOO NOVELTIES put on the market by the Gendron Iron Wheel Company, Toledo, Ohio, is located in the Manufactures Building, Section Q, Block 1. Their exhibit of Baby Carriages, Velocipedes, Bicycles, Tricycles, Express Wagons, Doll Cabs, Toy Barrows, &c., is in the Transportation Building, Section F, in East Gallery.

CHRISTY KNIFE COMPANY, Fremont, Ohio, are presenting their exhibit to the World's Fair visitors in Machinery Hall. They will manufacture Knives there and advise us that they have received permission to sell them. The exhibit is not yet completed.

BEVIN BROS. MFG. COMPANY, East Hampton, Conn., advise us that their application for space at the exposition was so long in receiving attention and the assignment of space was made at so late a day that they were unable to prepare a satisfactory exhibit. This was something of a disappointment to them, as they had intended to make a large display, being encouraged to do so, they state, from the fact that their exhibits at the expositions in Philadelphia in 1876, Melbourne in 1880 and Paris in 1881 received the first awards.

THE EXHIBIT of the Goodell Company, Antrim, N. H., is located in Section O, Block 3, on ground floor of the Building of Manufactures and Liberal Arts. They have made no display of Cutlery, owing to the fact that the space first assigned to them was not adequate, and also because they were notified of the assignment too late to make the necessary preparation and install the exhibit in season for the opening of the fair, which the managers insisted they should do. The company's exhibit consists of various Apple Parers, about a dozen different kinds, Seed Sowers, Cherry Stoners, Potato Parers and other labor-saving machines. The company claim to be the largest and oldest manufacturers of Apple Parers in the world and to make a larger variety than any other firm in the business. Their Parers are adapted to both hand and power use.

AMERICAN WELL WORKS, Aurora, Ill., make four exhibits. Their Deep Well Steam Pump exhibit is in the Machinery Building at the water tank in Section 26, Column K–30, where the company display between 20 and 30 different kinds of Deep Well Pumping Engines and Centrifugal Pumps. In the Mines Department they have a Well Sinking Machinery exhibit, where they show the Newman Auger, a Jetting Machine, Elliptical Drilling Rope Tools or combination plant, also a revolving combination plant. In the Windmill Department the company show their Advance Windmill. In the Agricultural Building a patented Plumb Steam Ditcher for digging ditches by steam and laying tile is exhibited.

GOULDS MFG. COMPANY, Seneca Falls, N. Y., are exhibiting their Pumps as follows: Special Triplex power Pump, in operation in service plant, Boiler House, Machinery Hall; Triplex boiler feed Pump, working exhibit in Western Dummy Railroad, Power House (near Forestry Building); hydraulic pressure Pump, joint exhibit with the Hydraulic Press Mfg. Company, No. 174, Implement Annex, Agricultural Building; Triplex light-duty water Pump, joint working exhibit, Paper and Mill Combine, Section S, Column B–E–42–49, Machinery Hall; Triplex stuff Pump, joint working exhibit, Paper and Mill Combine, Section 8, Column B–E–42–49, Machinery Hall; Triplex electric power Pump—1, Headquarters, Section H–15 (near water tank), Machinery Hall; 2, joint exhibit, General Electric Company, Section N–33, Electricity Building, Department J; 3, joint exhibit, the Elektron Mfg. Company, Section P, space 4, Electricity Building, Department J; triplex electro-power Pump, joint working exhibit, Eaton & Prince Company, Section C–2, Column 8, Transportation Building; Triplex electric deep-mining Pump, joint working exhibit, General Electric Company, Section N–33, Electricity Building, Department J; Triplex portable running Pump, joint working exhibit, General Electric Company, Section N–33 Electricity Building, Department J; power rotary force Pump, joint exhibit, the Jeffrey Mfg. Company, N. E. Section, ground floor, Mines and Mining Building; duplex Water Lifter, Headquarters, Section H–15 (near water tank), Machinery Hall. The company have issued a souvenir catalogue, in which the above goods are illustrated and described, the location of the different Pumps at the exposition being also indicated. T. E. Comba represents the company at the fair. Mr. Comba also represented them at the Paris Exposition in 1889. The headquarters of the company during the continuance of the fair will be it Section H–15, near water tank, Machinery Hall.

BUFFALO SCALE COMPANY, Buffalo, N. Y., advise us that they have at present several large orders on their books, one of these being an order from the Government for 1500 Scales to be used in the postal service. They have also recently filled a large order for the American Express Company, who are referred to as using Buffalo Scales exclusively. Among the interesting features in the Scales recently put on the market by this company is the Columbian patent Boston Platform Scale, which has an attachment which automatically balances the Scale when the scoop is placed on or removed from the Scale.

The Fulton Club.

THE FULTON CLUB, incorporated February 21, 1889, may now be classed as one of the permanent and substantial down-town clubs, where business men whose pursuits follow similar channels may congregate through the day and discuss matters more or less interesting to all. While a member leaving or coming into town can get breakfast or supper there, it is mainly intended to afford a place where a satisfactory noonday meal among congenial surroundings may be obtained, and may be said to be mainly a dining club. Its members are drawn principally from the metal, paint and drug trades. Among those who took a prominent part in organizing this club may be mentioned John H. Sprague of the Central Stamping Company, recently elected its president for the ensuing year, and Edward B. Brown of the St. Louis Stamping Company, who has just finished a year's term of service in the same position. Quarters for the club were secured in the Market and Fulton National Bank at the corner of Fulton and Gold streets, while that structure was being built, thus enabling the club to a great extent to have such portions as they needed adapted to their wants. They now occupy the entire sixth floor and a part of the seventh. On the sixth floor is the main dining room, commodious, well lighted and properly ventilated, as indeed are all the rooms, there being practically four sides from which light and air are admitted. In addition may be found a private dining room and *café*, reading room, office, &c., on this floor, while the kitchen is on the floor above. Not wishing to make a large club of it, where individuality might be lost to a great extent, the resident membership was limited to 200, there being now about 170 members. The non-resident membership, to which no limit was attached, now reaches about 25. The initiation fee for resident members was placed at $100, with annual dues of $50, the rates for non-residents being one-half of the above. The first president of the club was Jordan L. Mott of the J. L. Mott Iron Works, who was prevailed on to accept a second term, declining, however, a third. The second president was George W. Ketcham of the Central Stamping Company, Edward B. Brown, Eastern and export manager of the St. Louis Stamping Company, succeeding Mr. Ketcham. The club financially is strong, owing nothing and having a balance in bank. At the start the House Committee conducted the restaurant, but it was found a troublesome task for busy men whose time was wholly engrossed in their business; so a steward who formerly occupied a similar position in the New York Club was asked to take the matter in charge, being paid a bonus and allowed any profit accruing from successful man-

agement. This plan has so far given much satisfaction, and, having passed the experimental stage, is now a fixture. The club is not accessible on Sundays or holidays.

Insuring Hardware Stocks and Fixtures.

THERE is a certain readiness on the part of the merchant to accept an insurance policy from the hands of a well-known local agent without reading it, being satisfied as to its correctness as he puts it in the safe, perhaps remarking "I suppose this is all right;" the agent assuring, him as he pockets the premium, that it is all right. The merchant is surprised in case of fire to find how many things which he considered insured, were not covered by the policy. A. C. Lederman, Grand Island, Neb., has called our attention to this matter and remarks that the policies as ordinarily written up by the local agents are not just what a merchant needs, as they are not sufficiently explicit, and that in case of loss by fire a settlement is much more readily made when all that was supposed to be insured was really insured. To obviate any uncertainty as to exactly what is covered by insurance he uses the accompanying form, which no doubt will be of interest to our readers:

$....On the two-story brick metal roof building including basement, first and second story occupied by the assured and tenants as a Hardware and Stove store and Tin shop, also as dwelling and offices, situate on west one-third of lot two (2), block sixty-five (65), City of Grand Island, Nebraska.

$....On the store shelving, counters, elevator and fixtures, all while contained in above mentioned building.

$....On the plate-glass front of above-described building of first story, viz., two lights 76 x 112, two lights 17 x 112, two lights 21 x 70, and one light 24 x 68 inches.

$....On his general stock of Hardware, Stoves, Tinware, Housekeeping Goods, Cutlery, Binding Twine, Rope, Tinners' Stock, Merchant Iron and such other merchandise not more hazardous as is usually kept in like stores, all while kept in above-mentioned building.

$....On his tools, machinery and appliances, all while contained in the above-mentioned building.

$....On his store and office furniture, all while contained in the above-mentioned building.

$....On his safe and show cases, all while contained in the above-mentioned building.

Permission is granted to keep in stock not to exceed 50 pounds of Gunpowder and 5 gallons Benzine Stove Polish.

Permission is also granted to keep in stock not to exceed 65 gallons Gasoline, same to be confined in a tight metallic can placed in a frame warehouse, situate 14 feet south of above-mentioned brick building. The Gunpowder, Benzine Polish and Gasoline to be handled by daylight only.

Additional concurrent insurance permitted without notice.

Lightning clause and gasoline stove permit attached.
(Company's form.)

In this connection a case is brought to mind, which, fortunately for the merchant, did not prove disastrous. The insurance on the stock was divided up among three of the best companies represented by the local agent, and a clause permitting the sale of gasoline and of exhibiting gasoline stoves was incorporated in the policies. When the policies were delivered the merchant read them carefully and found them correct. At the end of the year the agent brought around new policies, and the merchant put them in the safe without examining them. At the end of the second year the insurance was again renewed, but the merchant having more leisure at the time the policies were received read them over. What was his surprise to find that the gasoline permit had been omitted. Looking over the insurance policies for the preceding year he found that they contained no permit for gasoline. The agent had left out the clause on his own responsibility. The feelings of the merchant can be imagined, when the full force of the hazardous condition in which his stock had been during the past year dawned upon his mind. Should there have been a whole or partial loss by fire during the year the insurance companies would probably have attributed it to the presence of gasoline, and as gasoline was being kept on the premises without permission the insurance under the circumstances would have been valueless.

Van Wagoner & Williams Company.

THE TRADE have learned with much regret of the financial difficulties which have overtaken the Van Wagoner & Williams Company, Cleveland, Ohio, and 14 Warren street, New York. The embarrassment is due principally to the tight money market and the large amount of capital which the company have expended in their new factory in Cleveland. The business was established in 1870 by Van Wagoner & Williams and incorporated in 1883 under New York laws, and so continued until April 1, 1891, when the present company were formed, with a paid-up capital of $150,000. The intelligence of the company's embarrassment was a complete surprise to the trade, as the company were regarded as in excellent financial condition, and were certainly doing a fine business, their sales during the present year having been considerably in excess of those of the same months in former years. The company believe that their capital is unimpaired and that their business will at once become prosperous when the present difficulties are satisfactorily adjusted. A preliminary meeting of the creditors was held on Monday, when a very friendly feeling toward the company was manifested and a disposition shown to make arrangements by which the business should be returned to the company's hands at an early day. In the meantime the business is being regularly carried on and the factory run as usual, so that the trade will experience little, if any, delay in the filling of orders. Much sympathy is expressed for the members of the company, who are exceedingly popular with the trade and held in high regard. The hope is generally expressed that the company will succeed soon in making arrangements by which their difficulties will be adjusted and business resume its regular and prosperous course.

Trade Items.

THE NEW YORK OFFICE AND WAREHOUSE of the Gendron Iron Wheel Company, Toledo, Ohio, has moved from 107 Chambers to their new building 358-360 Broome street, which has six stories and basement, 50 x 100 feet. The St. Louis branch will move in June to new quarters of about the same size. The company are also enlarging their plant at Toledo by the erection of a six-story and basement brick building, 50 x 100 feet, to meet the demand for more goods than they can supply with present facilities. The company are now employing 450 men.

THE PRICE at which the Fisher Horseshoer's Anvil, with detachable Vise, is sold, as given under Notes on Prices in this issue, is referred to by the manufacturers as being less than the wholesale price of imported Anvils, which not only have no such attachment, but are never warranted. The point is made that it is not a combined Anvil and Vise, but simply a Vise attachment to the Anvil, instantly removable, leaving the Anvil entirely free of all such incumbrance when desired.

THE BICYCLE STEP LADDER COMPANY have removed from 184 and 186 Clark street to 50 State street, Chicago. They have a fine exhibition of their Ladders in the Leather and Shoe Trades Building at the World's Fair, and invite visitors to call on them either in that building on the fair grounds or at their new office, as above given.

THE COPARTNERSHIP heretofore existing between Harlow G. Beach and John J. Alger, under the firm name of Beach & Alger, Alpena, Mich., has been dissolved. H. G. Beach having purchased the interest of John J. Alger, is continuing the business.

TROY FILE WORKS, Banker & White proprietors, Troy, N. Y., in introducing their Trojan brand of Horse Rasp, state that they are endeavoring to protect the jobber and retailers by requiring all orders to come through dealers whenever practicable. In a circular to the trade they remark that any dealer or jobber can handle this Rasp in full confidence that he will not be interfered with by the manufacturer, and that a low price will be offered as an inducement to introduce the Rasps, which will not be given after some one else has performed the work of introduction. It is explained that the strong point of the Rasp is its hooked or gouge-chisel tooth.

THE ORR & LOCKETT HARDWARE COMPANY are now installed in their new quarters at 71 Randolph street and 50 State street, Chicago. The property occupied is L-shaped, running round other buildings on the corner of State and Randolph streets. The company not only have entrances on two good thoroughfares, but also enjoy the advantages of a good wide alley in the rear, where they have located their shipping room. Three elevators have been built, two of which are used for freight, while one is exclusively for passengers. An immense stock of Hardware is carried on the upper floors of the warehouse, which is partly located on the State street side and on the rear half of the Randolph street

side. They have also a fine dry basement. Having very much more room than at the old location, the company have been able to introduce conveniences and improvements which will greatly facilitate the dispatch of business.

THE MAIN PORTION of the Hardware store of W. H. Miller & Co., Bay City, Mich., was destroyed by fire on the 27th ult. The firm advise us that they would like to have all their creditors send them duplicate invoices for the months of March, April and May and also statement of their account attached. Messrs. Miller & Co. would also be pleased to receive from manufacturers and jobbers copies of catalogues, price-lists and discount sheets.

THE SELTZER-KLAHR HARDWARE COMPANY of Philadelphia have been appointed sales agents for the Pullman Steel Frame Sash Balance for Pennsylvania and New Jersey.

H. M. MYERS COMPANY, Beaver Falls, Pa., in their advertisement on another page, call the attention of the trade to the special features of their One-Piece Solid Steel Shovels. The company advise us that during the past month their shipments reached 5600 dozen, which they refer to as the largest business for one month in their career. They state that last week they shipped four carloads of Shovels to the Pacific Coast, and are making large shipments right along to Western points.

IN THEIR ADVERTISEMENT in this issue the McMillen Sash Balance Company, Pittsburgh, Pa., direct the attention of the trade to the McMillen Combined Sash Balance and Lock. The advantages of this article are pointed out, and the statement is made that only two sizes are necessary to make up a stock order.

BRITTAN, GRAHAM & MATHES, Pittsburgh, Pa., illustrate in their page advertisement in this issue their Cylinder Store-Door Dead Lock, with tubular extension. This lock is especially recommended by them for its safety, and it is claimed that it cannot be picked. Their Cylinder Night Latch, with patent stop and drawback knob, is also illustrated.

THE SOLE SELLING AGENCY for the sale of the well-known Jonathan Crookes & Sons' Pocket Knives, Razors, &c., in the United States has been placed in the hands of Dame, Stoddard & Kendall, Boston, who advise us that they intend carrying a larger stock of these goods than has heretofore been exhibited in this country. They call attention to the quality and finish of these goods and state that a considerable reduction in price will be made.

AT THIS SEASON OF THE YEAR Linsley's Wire Cloth and Netting Price Book, published by F. J. Linsley, New Haven, Conn., will be found convenient. Each page of the book is devoted to one width of the Cloth or Netting, as follows: 12, 18, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 48, 60 and 72 inches. The cost of these widths up to lengths of 150 inches is given at ¾, 1, 2, 2½, 3 and 6 cents per square foot, which apply to Poultry Netting, Painted and Galvanized Wire Cloth. Costs at special prices can be figured out and entered in the blank columns provided for that purpose. The pages are so indexed that any width can be referred to readily, and the amount found which any sized piece of Cloth is worth.

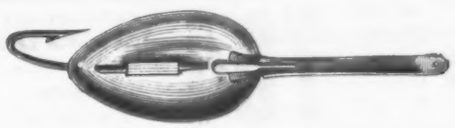
OHIO LANTERN COMPANY, Tiffin, Ohio, call attention in their advertisement on another page to the line of Lanterns which they are putting on the market. These goods, together with Lamps and some specialties, are represented in the company's catalogue, which has been recently issued.

Wallace & Sons' New Display Room.

WALLACE & SONS, 29 Chambers street, New York, have greatly enlarged their facilities for suitably showing their large and constantly increasing line of Lamp and Art Goods. Since occupying their present quarters, east of Broadway, various expedients have been resorted to in order to adequately exhibit the numerous patterns of banquet, piano, library, boudoir and other Lamps, until recently they secured about two-thirds of the loft above them to be used exclusively as a display room for Lamp goods, Pedestals, Tables, &c. The floor has been partitioned off from the remaining Chambers street portion, and has been thoroughly renovated and remodeled. The entire floor has been covered with a handsome velvet carpet in various tints of terra cotta. The walls have been decorated in cartridge paper of light tint with a deep frieze and molding, the whole harmonizing with the floor covering. Samples are suitably arranged on oak tables with a raised center, the whole upholstered in green colored felt of an olive shade. Hall and library Lamps are suspended from the ceiling by means of hooks attached to parallel lines of pipe, which permits of their being hung anywhere in almost any position without marring the decorated ceiling. There are platforms, similar in size to the table, raised about 6 inches from the floor, covered with carpet to correspond with that on the floor, on which their assortment of Tables, Pedestals, Cabinets, Jardinière and Window Stands, Blazers, Five o'Clock Teas, Chafing Dishes, &c., are shown. The wainscoting is in old oak and the whole interior well lighted by means of large skylights running to the roof, the whole supplemented by a large number of incandescent electric lights. At one end of the room, about the center of the building, is another sample room partitioned off, where choice or specially new patterns may be privately exhibited before being offered in the regular way. A table of generous proportions near the windows is provided with chairs, writing materials and conveniences for buyers who have finished inspecting the goods. There is also a desk for the manager in charge. Among the new goods just brought out was noticed a series of banquet Lamps in oxidized silver and gold plate modeled after an antique candlestick, which we are told has been in the possession of the Wallace family 250 years, they having added a fount only. This display room is reached by means of an ample hardwood staircase about the middle of the building, on the Broadway side. The new rooms add 2800 square feet to what the firm had already possessed. One point made by the management is that a complete stock can be selected here from the most primitive and inexpensive Lamps to those costing upward of $100 each, in addition to the numerous art goods referred to above.

Original Spoon Bait.

THE ORIGINAL SPOON BAIT to which we referred in a recent description of Buel's new silver Spinner is shown in the accompanying cut. This was invented by Julio T. Buel in 1834, and was made of an old brass table spoon, which he polished on the convex side of the bowl, after which a hook was soldered upon the small end and a line attached to the broken handle. This idea was suggested to him while eating lunch on the lake one day. He accidentally dropped a teaspoon overboard, and as it sank he noticed that it made peculiar twists and turns through the water, and that it was suddenly struck by a large fish before it reached the bottom. As the result of continued successes in making Baits, the manufacture of these goods was begun by him at Whitehall, N. Y., in 1848, where the business is still carried on by the J. T. Buel Company. An exhibit of these goods has been sent to the World's Fair, the case containing the original Spoon Bait among their extensive line of goods.



Original Spoon Bait.

Manufacturing.

AS NOTED IN OUR LAST ISSUE, Hoopes & Townsend, Philadelphia, are intending to enlarge their plant, and with this end in view have purchased a lot measuring 236 x 185 feet 6 inches. On this lot they will erect a one-story Bolt shop, 46 x 202 feet, a one-story coal and iron store and tool repair room, 40 x 200 feet, a one-story smith shop, 59 x 200 feet, and a two-story machine shop, 40 x 100 feet. There is a warehouse on the lot, 40 x 100 feet, five stories high, which has been improved and strengthened. The iron work for the new buildings will be made and erected by the Edge Moor Bridge Works.

Bevin Bros. Mfg. Company, East Hampton, Conn., state that their business, especially in the line of sleighing goods, was dull in 1890, 1891 and 1892, owing to the open winters, but the unprecedented fall of snow last winter cleaned out the stocks pretty generally throughout the country, and they regard the prospects for business during the coming fall as very flattering. The company are increasing their facilities in this department and are hoping to fill all orders promptly. They also advise us that their general business for the past three months has been far in advance of their expectations. In their line of Bicycle Bells they state that the output has doubled during the past year.

The Goodell Company, Antrim, N. H., are just commencing the erection of a brick addition to their factory, 100 x 30 feet wide, which will contain four floors and will be used for offices, packing room and storage. Their increased business has made this enlargement of their facilities a necessity.

Suggestions as to Improvements in Putting Up Goods.

SECOND ARTICLE.

By J. E. Backens.

THIS SUBJECT is one presenting a wide field for inquiry and investigation. It must be admitted at the outset that the improvements in the putting up of goods have been very marked during recent years; one has to search much more closely now than formerly for shortcomings. Probably in no country has this matter received as much attention as has been given to it by Hardware manufacturers in the United States. Still there is room for improvement, as I will endeavor to point out by considering the subject in its different aspects.

STRENGTH OF PACKAGES.

Many goods are put up in pasteboard boxes, which are too weak to hold them; this is notably so with heavy articles, such as Hammers, Hatchets, Pincers, &c. In some cases Nail Hammers are being put into wooden boxes, but in my opinion Hatchets require such boxes even more than Hammers. The edge of the Hatchet has a tendency to cut through at the angle of the pasteboard box, as the article is one frequently handled in a retail establishment, and the edges sticking through soon cut into and mar the shelving. In Pein Hammers, I venture to say, very few retailers ever get a box of the larger sizes that is not broken. In drawing these out of the shelf, as soon as the bottom of the box becomes weak they drop out at the heavy end. Of course it could not be expected to have the cheaper grades of these articles put up in slide-cover boxes.

E. 510 **704** G. 369
1 Doz. 3 Inch.
Broad Iron Bolt, Shoots Right and Left.
IRON WARDROBE LOCKS.
Corbin Cabinet Lock Co.

Fig. 1.—Printed Black on Green Paper.

E. 43 **02** G. 71
1 Doz. 1½ In.
Single Link.
BRASS CHEST LOCKS.
Corbin Cabinet Lock Co.

Fig. 2.—Printed Black on Orange Colored Paper.

THE SIZE OF PACKAGES.

As far as the quantity is concerned good judgment is very generally displayed; but the size of the box is frequently too small to contain the articles after they once become slightly disarranged. Perhaps there is a good argument in favor of having bulk and weight at a minimum, but I think it is slightly overdone.

PACKING OF GOODS.

As a rule care and system are noticeable in this direction, but there is room for improvement, particularly in the packing of Locks and Trimmings. While much progress has been made in the style of package, and the separate boxing of Locks and Knobs, it still remains a general custom to place the Screws "at large" somewhere in the box. The Locks, Escutcheons, &c., are wrapped in a light quality of paper; through friction and otherwise the Screws get loose in the box and too often turn up partly missing, having escaped through a crack in the edge of box, or perhaps dropped out in examining at the factory and overlooked. I have experienced this same trouble with expensive bronze front door and store door Locks; these being large and heavy the boxes do not always reach the retailer in perfect shape. If Screws are short, he cannot replace them, because retailers do not carry assortments of the various finishes of Screws in stock. Now, to remedy this, how simple it would be to place all Screws for each Lock in a stout manila envelope and seal it. That would prevent the scattering of Screws, which will work out of the smallest opening; the envelope would not be overlooked, and would obviate the necessity of counting the Screws when selling a Lock.

ONE, **01285** 3½ x 3 In.
Ornamental Bronze Front
Mortise Knob Lock.
Patent Steel Key.
4533 Knobs. **3** FINISH. **4971** ¼ Esc.
1¼ to 2¼ In. Doors.
P. F. CORBIN, New Britain, Conn., U. S. A.

Fig. 3.—Printed Black on White Paper; 3 Finish, in Red Ink.

LABELS.

This is an important feature on certain lines of goods, particularly such as are not usually sampled and placed in drawers. The usual fault of labels is that they are too uniform—not sufficiently distinctive. That which should receive prominence is frequently overlooked. Take, for instance, Cabinet Locks. These are usually sold from sample and listed by number, the number consequently is the part that should have prominence on the label. Some manufacturers have "caught on" to this, as shown by the labels reproduced in Figs. 1 and 2.

The advantage of these labels will be at once apparent to those who have experienced the difficulty at times of finding the desired number or size amid an assortment of goods of the same line. It will be noticed that additional numbers are also given corresponding with two other makes of Locks, thus covering the three makes most commonly found in jobbers' stocks. In Door Locks the same suggestions will apply; if it is a Mortise Lock, the word MORTISE should be extra prominent, or the number may be given prominence, as in Fig. 3.

HALF DOZ. 6 INCH.
TOWER'S
CHAMPION
SCREW DRIVERS.
Patented May 15th, 1877, and April 29th, 1879.

Fig. 4.—Black on Green Paper.

No. **86** 1-2 Doz.
SCREW DRIVERS,
Manufactured by the Stanley Rule & Level Co., New Britain, Conn.
4 INCH.

Fig. 5.—Black on Blue Paper.

Applying the same rule, for instance, to Screw Drivers, it will be found that the point to be emphasized is the length. The labels, Figs. 4 and 5, show by contrast the significance of this suggestion. Providing for space for marking cost and selling prices on a label I do not recommend. The ordinary green label cannot be plainly marked in pencil, besides the cost and selling marks should be distinctive, and that is best accomplished in using a separate label.

SHORTAGES IN COUNT

or weight are of rare occurrence so far as my experience goes. With few exceptions there seems to be constant progress noticeable in the putting up of goods; in some cases enterprising jobbing concerns have led the way to certain reforms or improvements, by having goods specially packed for them. The vast extent of the territory over which most of the articles of Hardware are shipped, requiring extra handling and perhaps repacking, are alone sufficient reason for permitting no relaxation of efforts toward further improvement.

Waste in a Store and How to Avoid It.

THIRD ARTICLE.

By G. B. Korbett.

A CAREFUL business man tries to avoid wasting anything useful, as much as possible, not merely alone for economy's sake, but also from principle. It is wrong to let any substance, whatever it may be, go to waste, instead of turning it into use. Careful husbandry means to apply everything to its proper use, and is therefore the source of order, and without order there can be no success—no lasting one anyhow. A careful salesman will, without showing any niggardly disposition, do all he can to turn everything into use, and never forgets that the smallest sales are the ones which naturally bring the highest percentage of profits; purchasers who have any common sense do not expect it any other way. It would therefore be foolishness not to charge for trifles out of a false sense of liberality or chevalierly impulse. There are exceptional cases, though, where a certain display of liberality is well placed. It is a safe rule to remember, notwithstanding, for everybody who tries to make a living by selling merchandise, that goods are kept in store to bring financial returns and not to be given away as little tokens of friendly feeling.

WEIGHING AND MEASURING.

In weighing or measuring articles which you sell you must be just, but need not be liberal. To do so it requires some skill, as it looks very mean if you make your efforts at strictness too noticeable. A salesman who takes out a few nails to drop them back again, and maybe repeats this, gives the impression of trying to treat his customers rather niggardly and will drive them away by and by. It requires a good deal of practice to use a scale in such a way that, without your giving anything more than the strict weight, you create the impression of liberality. In measuring goods with a yard measure it is the same thing; it demands practice, and the first rule should be exactness and justice to both sides concerned—the seller and the buyer.

ODDS AND ENDS.

Economy can further be practiced by using your wrapping paper carefully and by never taking any more than necessary for immediate use, also by keeping it as much as possible in a cool place, out of draft, to prevent it from getting too brittle and thereby weak. Goods which you receive and unpack have in most cases their wrappings, boxes or twine well enough preserved that they can be made to do service once more, and there are always some spare moments in any salesman's business hours which he can utilize by making such odds and ends fit to be used over again.

ECONOMY IN GAS.

In many places of business it is necessary to have a light burning even during daytime, as without it desks or counters or storage rooms would be too dark to work in. Such lights should always be turned low if not really wanted for work. You will be astonished what a difference it makes after the end of a month in your gas bill if you mind your gas lights carefully.

In every packing room there might be a convenient hook fastened in the neighborhood of the packing counter or table, on which you should hang all the ends of twine which can be used over again, while a convenient space should be found for your odds and ends of wrapping paper and for your used boxes, none of which need go to waste.

GRATIFY YOUR CUSTOMER.

Empty pasteboard boxes will form very practical and welcome receptacles for nails and different Hardware. Mechanics who have to work outside prefer them greatly to paper wrappings. You will save by so doing the outlay for new wrapping paper and gratify your customer besides. Try to get rid of remnants of goods also, even if you have to sacrifice a cent or two. If, for instance, you can sell a remnant of picture wire, let us say one and three-quarter yards, it is more practical than if you would sell two yards which you would have to cut off from the piece.

It is also true economy to try and sell the last articles out of a lot rather cheaper than the regular price. This is wiser than to keep them and have them thrown into the background by the new stock, which always looks fresher and more inviting.

In leaving your place of business at night time you should turn off the gas at the meter and so prevent any possible leakage.

DON'T TRUST HIM.

It happens in every store once in a while that a customer is a few cents short, and even if you do only a cash trade with him you don't like to refuse him the goods on this ground. Be careful to charge such small items into his next purchase or to ask in a polite way for it directly. If the customer is honest he willingly pays it, and if not you have to make him pay it in some way or another and not trust him again.

Do not use any of your tools or belongings in a careless way and do not get into the habit of handling your merchandise as if it were imperishable. Many articles get shopworn in a short time on account of being carelessly handled. Consider all your goods as things which you hold, so to say, in trust for the purchaser and which you are bound to deliver in good order. This will save you many a loss and give your whole place the aspect of neatness and order, the precursors of well-doing and success.

Returned Goods.

THE ARTICLE referring to returned goods from the jobber's standpoint, which we published in a recent issue, has called out the following communication on the same subject, which is written from the purchaser's standpoint:

In reading your late article on above subject, from the jobber's standpoint, I wondered whether the jobber suffers half as much from the purchaser's impositions on him as the purchaser suffers from impositions of the jobbers.

Three months ago I ordered of a St. Louis house, through their traveling agent, ½ dozen Badger's Emerson's Razor Strops. The agent was sure they had them, and, indeed, the catalogue described them perfectly—number and quality. When received they were inferior goods, made by some party who had appropriated the numbers and description of a reputable manufacturer. I returned the package, express paid.

I have on my receiving counter now 1 gross common Cut Tacks, which were sent by a manufacturing company in response to my order for Carpet Tacks. Carpet Tacks have large heads, Cut Tacks small heads.

Last night a customer asked me for a Bailey Iron Plane. I handed him the Plane from a late supply just in from Kansas City. "This is not a Bailey Plane," said my customer. "If it were it would have 'Stanley Rule & Level Co.' stamped upon it." Too true. This jobber had the impudence to fill my order for Bailey Planes with an imitation. I had received the goods, marked them myself, and put them away without discovering the imposition. I knew there were imitations of this Plane, but did not think a respectable jobber would commit such a contemptible imposition. Again, I ordered, two weeks since, a supply of Rules from a commercial traveler. "Stanley Rules," said I. "We have them," replied the agent. At the same time I ordered half a dozen Morrill's Saw Sets. The goods were laid on my receiving counter yesterday, and that indignant jobber who complained in your issue of March 30 would hardly believe that there is one solitary box of Stanley Rules, five boxes of Chapin's and about a dozen of some new kind, of which I have never before heard, but which are plainly an inferior article.

The Saw Sets are marked "Morrill s patent," but are a new Morrill to me, and not the goods ordered.

I have a man in my employ now who came to me with the recommendation of one of the most prominent hardware firms of Chicago. He says that the Chicago house paid him and the other clerks a percentage for overcharging the boxing on goods shipped out.

During the past winter I received three boxes Sharp Toe Calks from a St. Louis house. They were one size larger than we use. We immediately notified the house, and when the traveling salesman again called on us we notified him. The house wrote us explaining how it hap-

pened, but made no disposition of the goods.

A short time since we returned them by freight, making no charge for the freight and carting we had paid on them.

That jobber surprised me. He credited me with the goods, but charged me with the freight from here to St. Louis, and for carting.

I immediately replied and charged the above mentioned freight back, also the original freight from St. Louis to Denver, the carting at St. Louis which he charged me when first shipped, the carting when received by me, and the carting when returned by me to St. Louis.

He made the mistake. It is right he should pay the carting when shipped and when received, and the freight both ways.

It is my opinion that the jobber should be made to employ competent assistants and ship goods as ordered. Most of the mistakes are made by poor assistants who are employed to economize.

Price-Lists, Circulars, &c.

ODELL HARDWARE COMPANY, Greensboro, N. C.: Catalogue No. 8, Spring and Summer Goods. The book contains 84 large-sized pages, with illustrations, prices and description of Refrigerators, Parers, Cherry Seeders, Cider Mills, Freezers, Pumps, Scythes, Cradles, Hammocks, Mowers, Ice Shaves, Milk Shakes, Screen Doors, Lawn Sprinklers, Chains, Shovels, Road Scrapers, Plows, Barrows, &c.

E. BEMENT & SONS, Lansing, Mich.: Descriptive Catalogue of Implements for the farm and garden. This fine catalogue consists of 160 pages. It is substantially bound in a stiff paper cover with a pictorial title. The contents cover Plows, Shovel Plows, Stocks for Plows, Cultivators, Harrows, Scrapers, Potato Diggers, Cotton and Corn Planters, Man-Power Cultivators, Hand Drills, Steel Plow Shapes, Cultivator Blades, &c. The variety shown is very large, covering all requirements. Full price-lists are given, accompanied by code words for convenience in telegraphing orders. Repair price-lists are also very complete, covering all parts. Among the new articles shown in this calalogue is the Ajax Man-Power Cultivator, which is operated by the weight of a man's body against a push bar, leaving his hands free to guide the handles of the blades. It is made with a double wheel and two sets of blades on one wheel and a single set of blades, or with seeder. This establishment last year used 3,794,953 pounds of iron and steel. They make all their own handles and other wood work. All parts are painted by dipping, then striped and varnished by hand. They have a capacity for making 25,000 Ajax Five-Tooth Cultivators per year.

BARROWS LOCK COMPANY, Lockport, Ill.: Supplement No. 4. Illustrations and prices are given of Hinge Corner Plates, Escutcheon and Pull, T-Handle Turn with Plate, Door and Drawer Escutcheons, Drawer Pulls, &c. These goods are made in Chicago, Colonial and fluted designs.

THE FOOS MFG. COMPANY, Springfield, Ohio: World's Fair Edition Catalogue. This is devoted to the Scientific line of mills, which are described and illustrated.

TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind.: Seasonable goods for the fall and summer trade. Their small catalogue under date June, 1893, is a precurser to a general catalogue to be issued shortly. Illustrations, descriptions and prices are given of Alarm Tills, Saw Bucks, Adjustable Stove Trucks, Slaw Cutters, Vegetable Cutters, Kraut Cutters, Saw Frames and Furniture Casters.

F. W. MANN, Milford, Mass.: Mann's Bone Cutter for poultry food. The machines are made in a variety of sizes and styles, which the manufacturer states cut bones fine enough so that they are all eaten by the fowls, and coarse enough so that when thrown on the ground none will be wasted.

MONROE REFRIGERATOR COMPANY, Lockland, Ohio: Monroe Stoneware-Lined Dry Air Refrigerators. Their Catalogue No. 4 illustrates these goods in five sizes and patterns, with description of their construction, and advantages.

THE STORM MFG. COMPANY, Newark, N. J.: New York Safety Dumb Waiter, Manhattan Dumb Waiter, Improved Humphrey Hand Elevator, Carriage Elevators, Invalid Lifts, and Steam, Electric and Hydraulic Elevators for freight and passengers. An imitation flat steel key is sent by the company as being the key to their new factory, with an invitation to examine their line of Elevators and Dumb Waiters.

THE MCINTOSH-HUNTINGTON COMPANY, Cleveland, Ohio: Extra pages for their general Hardware Catalogue, which describe many new goods that they have added to their line. The pages are numbered and gummed for insertion in the proper places. Their line of Bicycles and accessories is referred to as being complete.

Prize Competitions

$25.00.

Prize Competition No. 26.

SUBJECT:

To What Extent Are Manufacturers and Jobbers Justified in Selling to Consumers.

This competition is suggested by the fact that frequent complaints are made that manufacturers and jobbers interfere with the retailer's business by selling to his customers. It is intended to draw out the views of the trade on the subject. In discussing the question the following points may, perhaps, naturally be touched upon:

The annoyance and injury to which the retailer is thus subjected;

What the rights and privileges of the manufacturers and jobbers are in this matter;

What it is feasible for retailers to do for their own protection.

This competition will remain open until July 1, 1893.

Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers will be favorably regarded as meeting the purpose for which these competitions are announced.

The following prizes will be awarded:

First prize	$12.50
Second prize	7.50
Third prize	5.00

The prizes will be awarded for answers which, in the judgment of the Committee of Award, are most suitable for publication and of the most general interest

We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than July 1, 1893. They should be addressed as follows:

DAVID WILLIAMS,
96-102 Reade street,
New York.

Prize Competition No. 26.

The committee to whom the contributions in Prize Competition No. 11 were referred have awarded the prizes as follows:

First Prize of $50 to J. E. JANSSEN, Eureka, Cal.

Second Prize of $25 to H. P. COLE, Council Bluffs, Iowa.

Third Prize of $15 to J. C. MOORE, Saltsburg, Pa.

Fourth Prize of $10 to HARRY G. DRUMMOND, Newark, N. J.

We also take pleasure in announcing the decision in Competition No. 12 as follows:

First Prize of $12.50 to J. E. JANSSEN, Eureka, Cal.

Second prize of $7.50 to A. Q. CASSELBERRY, Pittsburgh, Pa.

Third Prize of $5 to CHAS. F. BUGG, Farmville, Va.

Other Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 24. Closing June 3.
Short Methods of Figuring Discounts.

No. 20. (Reopened.) Closing June 10.
A Reliable System for Securing the Correct Charging of All Goods Sold on Credit.

No. 25. Closing June 24.
Show-Window Display.

No. 26. Closing July 1.
To What Extent Are Manufacturers and Jobbers Justified in Selling to Consumers.

Another subject will be announced in our next issue.

It Is Reported—

That Pond & Girdly have recently entered the Hardware business at Springfield, Vt.

That Stevens Bros.' Hardware store at Platteville, Wis., was destroyed on the 18th ult. Loss, $12,000; insurance, $3000.

That J. Anderson, dealer in Hardware and Tinware, Iron Mountain, Mich., has sold out to J. A. Lindstrom.

That Small Bros. have disposed of their interest in the Hardware firm of Carmine & Small Bros., Buckley, Wash.

That D. Anderson, Hardware dealer, at Howe, Neb., has sold out.

That Geo. V. Strong, Jr., formerly with Giles & Murchison, and B. Frank Lee, salesman for W. E. Springer & Co., Wilmington, N. C., have formed a copartnership and will open a Hardware store at Rocky Mount about June 1. The style of the firm will be Strong & Lee.

That C. H. Dahlborg, dealer in Hardware, &c., Campello, Mass, will erect a block on the site of his present place of business.

That Frederickson, Burton & Co., Cameron, Wis., have succeeded D. Mosher in the Hardware business.

That C. W. Parsons & Co.'s Hardware store at Toledo, Ohio, was damaged by fire on the 21st ult. The total damage to stock and building was $5000.

That H. C. Saunders, Hardware dealer at Milton, Wis., has been succeeded by Saunders & Maxon.

That the Clark & Jacobs Hardware Company have been organized at Killingly, Conn., with a capital of $10,000, in 200 shares of $50 each.

That W. H. Stevens, Lisbon, Maine, is moving his Hardware stock to Lisbon Falls.

That the retail department of the Chapin-Wells Hardware Company, Duluth, Minn., which was destroyed by fire some months since, resumed business on the 8th ult. The new quarters are in a building recently completed, the width of which is 50 feet and the length 140 feet. The store gives excellent opportunities for the display of the large and varied stock of Hardware and Sporting Goods which the company are offering to the public. The basement will be used as a storage room for extra stock and the more cumbersome lines of light Hardware. The retail store will be under the management of W. F. Quayle, who managed it in its former quarters.

That James McElroy has commenced the Hardware business at Milford, Iowa.

That W. F. Lipke, dealer in Hardware, Scottsville, Kan., has sold out.

That R. L. Turney has lately engaged in the Hardware business at Houlton, Maine.

That V. E. Manley, Hartford, Mich., is out of the Hardware business.

That W. P. Fulton, dealer in Hardware, Riverton, Neb., has sold out to B. Shaw.

That A. W. Knapp has commenced the retailing of Hardware at Garrettsville, Ohio.

That M. C. Mayer has been succeeded in the Hardware business at Erie, Pa., by Henry Mayer.

That E. O. Keck & Co., dealers in Hardware, Rock Rapids, Iowa, have been succeeded by Keck & Billerbeck.

That the Hardware store of Frank McClure at Kane, Ill., was robbed of $100 worth of goods on the 2d inst.

That T. H. Crummey and C. H. Brooks of Lake Geneva, Wis., have purahased the Hardware establishment of Griswold & Sanborn, Janesville, Wis. The new firm name will be Crummey & Brooks.

That Platt & Bridgeman are a new Hardware firm at Williamsfield, Ohio.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

According to the general run of reports there has been a full distribution of nearly all lines of Paints, Colors and kindred goods. Exception may be noted in the instance of some few specialties, such as prepared Paints used by car builders and in other high-class lines of work, but the leading staples have moved into the channels of distribution and consumption at a fairly liberal rate. Base materials used by grinders have not met with remarkably free sale, but the aggregate movement makes a good showing and, along with the fact that prices are well maintained, the conditions existing in that line afford evidence that the drawbacks of stringency in the money market are hardly as annoying as they have been latterly in various other branches of business, although still figuring as an obstacle in the way of active movement. Changes in prices have been few and unimportant.

White Lead.—Deliveries on old orders have been quite large, and distinctly new business makes a good showing also, so that upon the whole the movement loses very little if anything in comparison with the usual run at this season of the year. This applies alike to corroders' product and the cheaper varieties of pigment. On prices there is merely a repetition of previous reports. Irregularities are heard of in jobbing circles and in outside markets where small producers incline to be aggressive, but it does not transpire that list prices are deviated from to any greater extent than they have been heretofore this season.

Red Lead.—The movement has been good, though orders are chiefly for moderate quantities, the larger consumers receiving supplies through deliveries on contract. The market is firm and prices are unchanged at 6¾¢ @ 7¼¢ for domestic, and 8½¢ @ 9¢ for imported.

Litharge.—There is nothing new to report. The demand is moderately active and former prices are maintained.

Orange Mineral.—Consumers have purchased only as actual requirements necessitated and the market has a quiet appearance. However, prices are maintained at 8¼¢ @ 8½¢ for American, 8½¢ @ 8¾¢ for French, and 9¼¢ @ 10¢ for German brands.

Zincs.—The movement of American Oxide is fully up to the average for the season, and with current production closely absorbed through deliveries on contract prices remain firm at the former range of 4½¢ @ 5¢, as to quality and quantity. The demand for French Zincs is moderate and is met at previous quotations.

Colors, &c.—Dry Colors generally are moving out in fairly liberal quantity, and, while individual purchases are chiefly of hand-to-mouth character, there is enough business to prevent serious breaks in prices. Practically the same may be said of Oil Colors and the better class of Mixed Paints.

Oils and Turpentine.

Slow trade has been the prominent feature in nearly all branches of the Oil market. The one prominent exception is Linseed Oil, the distribution of which is fully up to the average for this season of the year and more liberal, if anything, than it was a month ago. In prices the movements have been narrow all along the line, but chiefly to the advantage of buyers. Generally speaking, the statistical position of animal and vegetable oils is quite good, but extreme caution on the part of buyers, prompted in a good measure by general financial conditions, has had the effect of preventing upward movement of values in those goods that are most favorably situated for an advance and imparting weakness where soft spots existed.

Linseed Oil—There has been some advance in cost of raw material. The by-product, oil-cake, is realizing rather better prices. One thus about neutralizes the other as a factor governing values. There is little, if anything, more than ordinary contention among manufacturers. In short, the general situation has favored a steady market and the old line of prices prevails. Sales have been fairly large and the demand at the present time is fully up to the average for this season of the year.

Cotton-Seed Oils.—A dull and weak market is to be recorded. Prices have fallen several cents per gallon, and neither home trade nor export demand has improved to the slightest extent. Speculative interest has become extremely tame also, with more signs of inclination to realize profits than to engage in new ventures. On prime quality Crude Oil there has been a drop from 45¢ to 41¢. Prime Summer Yellow has suffered a similar decline, selling at as low as 45¢ @ 46¢ toward the close of the week. Speculative sentiment is partially responsible for the break, but dull trade is not without effect, and the dullness is due in a good measure to the fact that large home consumers are well stocked and export buyers without orders of any magnitude.

Lard Oil.—The manipulation to which the market for raw material is still subjected tends to prevent anything more than strictly routine buying of Oil, and business is at present of retail character. City pressers are working wholly on orders, however, and the receipts from out of town are so moderate that prices are held remarkably firm on the basis of 85¢ @ 86¢ for current make, prime quality.

Cocoanut Oil.—Advices from foreign markets quote prices higher there and state that prospects are the reverse of favorable for cheaper Oil in the near future. Supplies in sight prove to be more than ample for present market requirements, however, and prices are affected very little if at all by the foreign situation. Ceylon may be had at 5¾¢ @ 5⅞¢, and Cochin at 6¾¢ on the spot, in wholesale quantities.

Olive Oil.—Common Olive Oil in barrels finds slow sale and the market is weak under the influence of rather large stocks here and favorable prospects for the next Olive crop. It is no difficult matter to secure round lots at 58¢ on the spot, although 60¢ stands as the popular quotation.

Fish Oils.—New Bedford letters note sales of Crude Sperm Oil aggregating about 1300 barrels. The trading basis is not divulged, but stated not to be above 80¢ there. Crude Whale Oil has been dull and prices are wholly unchanged. The manufactured products are selling in routine way only and chiefly at old prices.

Spirits Turpentine.—Heavy stocks at the South have had a depressing effect upon the local market, and combined with more or less urgency to sell on the part of receivers forced prices down to 28½¢ for regular and 29¢ for machine barrels.

Steel Tackle Blocks.

Boston & Lockport Block Company, Lockport, N. Y., and Boston, Mass., are offering blocks, as herewith shown. The block shown in Fig. 1 is of hollow steel, with rounded edges to protect the rope. The manufacturers claim that the blocks are much lighter than wood blocks, that the shells are stronger than wood and will not shrink or split, and that the strain comes entirely on the wrought-iron straps. The blocks are made single, double and triple, iron-bushed, Ford's self-lubricating, fire-roll self-adjusting roller bushed, and self-lubricating metalline bronzed bushed, for rope in diameter from ¼ inch to 1½ inches. Figs. 2 and 3 show blocks with loose hooks, and the edges of the plates rounded to protect the rope. It is explained that sizes 9 inches and larger have the same score as wide-mortise wooden blocks and will take the same sized rope.



Fig. 1.—Hollow Steel Tackle Blocks.



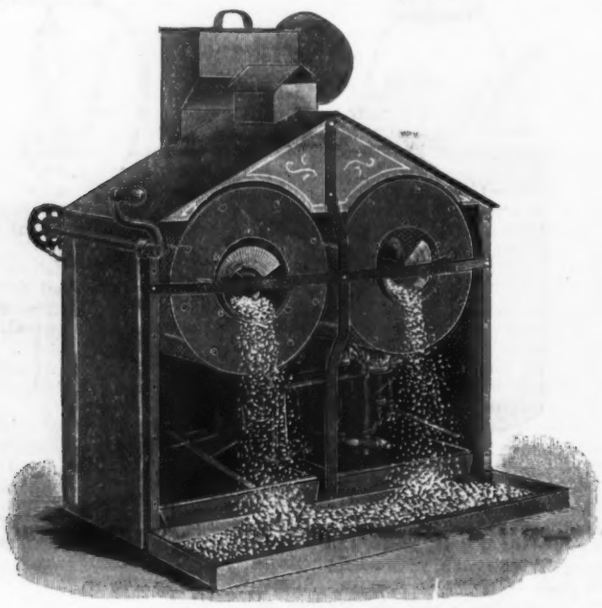
Fig. 2.—Single Steel Block.



Fig. 3.—Double Steel Block

Twin Cylinder Corn Popper.

Donathen Novelty Mfg. Company, 510 Broadway, Kansas City, are putting this popper on the market as shown herewith. The fire or heat is furnished by five single burners to each cylinder, formed into a cluster. It is explained that the burners under each cylinder are opened and closed by a single lever, moving about 4 inches, enabling the operator to regulate or to shut off the heat instantly. The cylinders are described as being operated by a double gear, turning the outside shell holding the unpopped corn slowly over the fire, while two pick ups, of coarse wire cloth, separate and carry the popped corn rapidly to the conveyer trough, to overcome all danger of choking up. It is stated that the conveyers discharging the popped corn run at twice the speed that the shell does, thus preventing all danger of the corn catching fire. The machine is provided with a self-feed, described as being under perfect control, to hold the shelled corn. A tube extends through the feed, which is designed to draw surplus heat from the cylinders through the body of corn, to warm it thoroughly before it is thrown into the cylinder. The heating of corn before it goes into the cylinder is referred to as reducing the time required in popping one half. The manufacturers claim that the machine is fed regularly while in motion, thus wasting no time in feeding; that one man operates two cylinders with ease, and that the machine pops corn without stops until the work is all done. The machines are made with a capacity of from 4 to 47 barrels per ten hours.



Twin Cylinder Corn Popper.

Barber Improved Braces.

The accompanying cuts represent improvements in braces being introduced by Millers Falls Company, Millers Falls, Mass., and 93 Reade street, New York. The brace, Fig. 1, is made with steel sweep, forged steel jaws, with brass rings inserted in each end of the wood handle to prevent it from splitting off, and with a hardened steel anti-friction washer between the two sockets of the chuck to reduce the wear. A feature of the brace is the head, with a bearing of steel balls, as shown in Fig. 2. The balls are designed to prevent wear and to reduce the friction to a minimum. The construction of the jaws is shown in Fig. 3. The brace is heavily nickel plated and warranted by the manufacturers, who state that they endeavor to make the goods as near perfection as is possible in durability, quality of material and workmanship, and in fineness and beauty of finish.

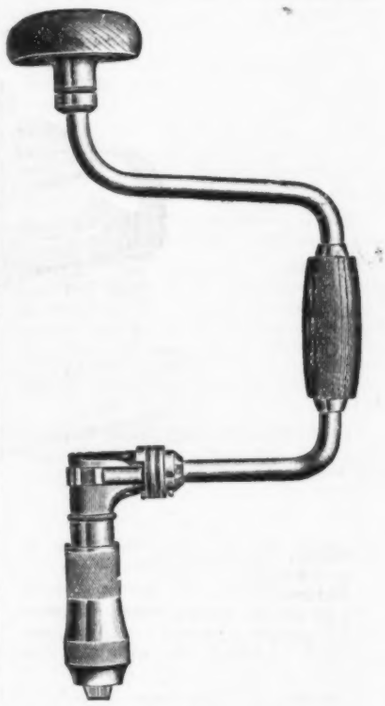


Fig. 1.—Barber Improved Braces.

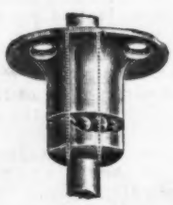


Fig. 2.—Head with Steel Balls.



Fig. 3—Jaws with Spring.

Ideal Coffee Mill.

Waddel Wooden Ware Works, Greenfield, Ohio, are placing a new line of box coffee mills on the market, one of



Ideal Coffee Mill.

which, the No. 1 A. is shown in the accompanying illustration. The strong features claimed by the makers of the mill are the large bronzed hopper, artistic grasping handle, rapid grinding burrs, and round tin cup with automatic ejector. The burrs, it is stated, are so constructed as to draw the coffee berry into the grinders. The manufacturers state that a large amount of coffee can be ground with comparatively little labor.

P. & A. Royal Lamp No. 835½.

The Plume & Atwood Mfg. Company, 18 Murray street, New York, are putting this lamp on the market, as



Fig. 1.—P. & A. Royal Lamp No. 835½.

shown herewith. The lamp is of the central-draft pattern, while the wick is raised by lifting the wire which projects above the font at the right-hand side of the cut. A feature of the burner is the lighting lift, shown in Fig. 2, which lifts on a spiral movement and remains in position while lighting. The part of the burner in Fig. 2 is removable from the lamp to make it easy to clean. It is held firmly in position by notches at its base, into which lugs fit to prevent its turning when lifting for lighting. The manufacturers claim that the lamp

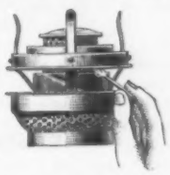


Fig. 2.—Spiral Lift.

gives a proportionately larger amount of light for the oil consumed.

Globe and Monarch Oil Cans.

The accompanying cuts represent cans put upon the market by the Winfield Mfg. Company, Warren, Ohio. The Globe can and lamp filler, as shown



Fig. 1.—Globe Oil Can.

in Fig. 1, is manufactured in all tin, and in galvanized iron with tin tops. It is explained that the can has an extra-large-sized filling hole to accommodate large-sized funnels, while the filling hole and pouring spout are located at opposite sides of the top to avoid having the oil run from the can screw when filling a lamp. The flutings are referred to as adding to the general appearance of the can, as well as to the strength of the top, and the spout as being reinforced.

The Monarch can for oil and gasoline, Fig. 2, is described as being made of heavy galvanized iron, hung in a frame of bar iron, finished with japan. The can is removable from the frame



Fig. 2.—Monarch Oil Can.

when taken to be filled. The stream, when passing through the large outlet, may be regulated by pressure on the spring valve.

Ideal Double-Acting Spray Pump.

The accompanying illustration represents a pump offered by the Deming Company, Salem, Ohio. In use the double-wing oscillating piston is described as being operated by a lever connected to a shaft, passing through the hub in the center of the cylinder cap, thus rendering the pump double acting. The pump is made in both iron and brass, the suction of both being fitted with 2½ feet of 1-inch iron pipe, with strainer on the end to prevent leaves or other foreign matter from getting in the pump. It is stated that an absolutely constant stream is produced by the pump, and that it can be



Ideal Double-Acting Spray Pump.

placed either on the end or side of a barrel. The pump is especially recommended by the makers for grape growers, and the suggestion made by them, that for spraying with Bordeaux, ammoniacal mixtures, &c., the all brass pump should be used.

New Steel Monarch Poke.

A. W. Bishop, Berea, Ohio, is introducing the poke shown in the accompanying illustrations. The poke is described as being made of steel, all



Fig. 1.—New Steel Monarch Poke.

except the stale, having steel bearings, with a well-shaped steel bow, but with no holes, pins or keys. The ends of the bow are looped and clinched to the frame, making, it is stated, a very strong fastening. The point is made



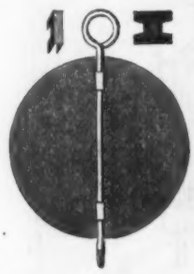
Fig. 2.—Manner of Fastening the Bow.

that the spring is broad, and rests against the animal, being the reverse of a head block resting against the neck, thus making it more effectual.

An Improved Hot-Air Damper.

We illustrate herewith an improved hot-air damper which is being placed on the market by the Excelsior Steel Furnace Company, Chicago. This concern have made and sold a great many dampers of the form and construction familiar to the trade, but seeing an opportunity of improving the same they have built new machinery for the purpose and are now turning out the new goods. In the new damper no rivets are used, the cleat holding the rod being formed of galvanized iron passing entirely through the damper and being clinched on the opposite side. The rod also has been improved by making the handle smaller.

The new damper is made almost wholly on the die process, and, while a small thing, it may be interesting to note that in the course of manufacture it passes through fully a dozen different machines and processes. The disk or body is circled out on a machine built for the purpose, and then passes to a die which perforates eight holes through which the cleat passes. The cleat is cut out by a die in the form shown in the small figure to the right of the damper handle in the cut, and then is formed up by another press to the shape shown in the figure to the left in cut. Next the cleat is placed in position, and clinched by machinery and rod put in. The rod itself is first cut into suitable length from bars of steel, then passes

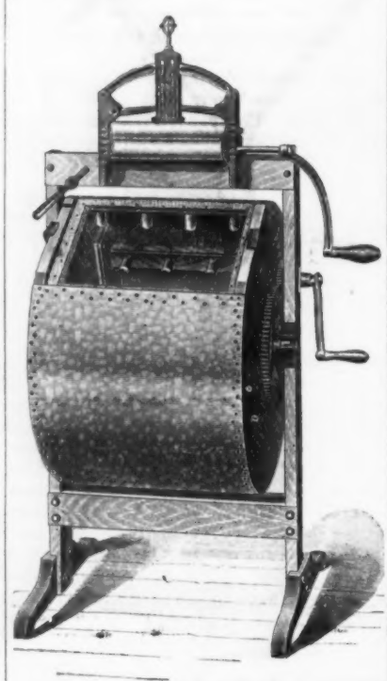


An Improved Hot-Air Damper.

through a machine which turns the handle, after which the rod is drilled and pointed. In spite of these numerous operations the damper complete is sold to the trade at a remarkably low price.

Paragon Rotating Washer.

Olds Wagon Works, Fort Wayne, Ind., are introducing this washer, as herewith shown. Its operation is described as simple, combining the principles of the old pounding barrel together with the abrasion of the clothes in contact with themselves, being an effective rubbing with the least possible wear and tear. Attention is called to the symmetry and mechanical finish of the machine throughout.



Paragon Rotating Washer.

Puritan Coffee Pot.

The Bronson Supply Company, Cleveland, Ohio, and 72 Beekman street, New York, are bringing out a new coffee pot, as here shown, which will be known as the Puritan. The article is well made of heavy planished tin, or can be furnished nickeled. The enameled wooden handle is attached to the body of the pot by means of twisted wire securely fastened with stamped bosses to the sides of the vessel. The bottom is struck up in a die and has a deflected edge, the bottom being joined to the body by a double-seaming machine, and soldered inside. One of the leading features of the coffee pot is the method now employed in making the filter. This consists of a metal rim having straight sides, with a bead at bottom in which is placed a circular wire spring for holding the filtering cloth. In many coffee pots the filtering facilities for various reasons have proved troublesome. As now arranged a piece of filtering cloth can be cut and put in place as often as desired by the most inexpert, and as the hot



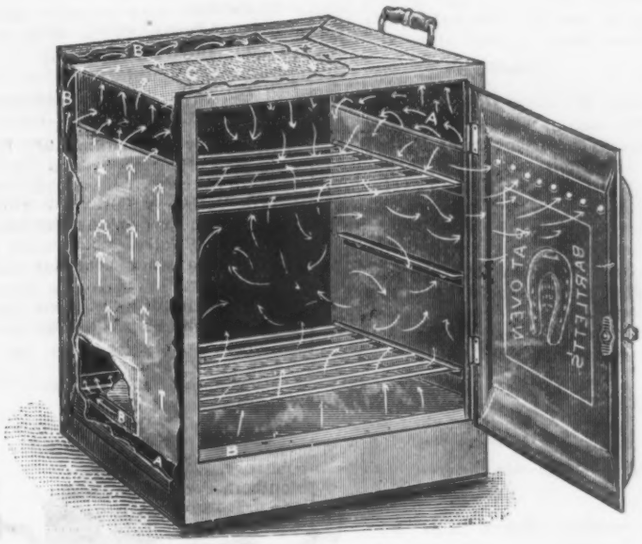
Puritan Coffee Pot, with Section Cut Away, Showing Filter.

water poured on the pulverized coffee is compelled to go through the whole mass, the full strength is attained, there being no opportunity for it to escape at the sides. A bead in the coffee pot keeps the filter from going below a prescribed point. The general appearance of the utensil in make and finish is excellent. They are made in 2, 3, 4 and 5 pint sizes.

The Bartlett Portable Gasoline Oven.

A portable oven intended for use in connection with gas, gasoline and other stoves has recently been brought to the attention of the trade by Russell, Bartlett & Kunz, Commercial and Market streets, St. Louis, Mo. The oven is constructed with two separate and distinct sets of flues. The first current of heat, we are informed, is admitted at the bottom of the oven, passes up the flue on either side of the oven marked A in the illustration and enters the baking chamber near the top of the inside lining, passing out through the openings in the top of the door. The heat currents are clearly indicated in the illustration, which represents an oven with the door open and portions of the side and top broken away. The second current of heat, we are told, is produced by a secret flue, marked B, at the bottom of the oven, and connecting with the flue B at the back and top of the oven. It then passes down through the perforated plate C into the baking chamber and passes out through the same openings as those provided for the first set of flues. By this arrangement the manufacturers claim all articles baked are given a double current of heat

over and across the top and also insured a thorough and efficient baking on the top and bottom. The oven is also provided with handles by means of which it can be readily moved about. In the directions which the manufacturers give for using this oven the operator is cautioned to have the bottom plate forming the secret flue to rest on the bottom and against the back of the oven. The oven, it is claimed, should be placed over the burner so that all the blaze will be admitted into the opening at the bottom. The oven should be well heated before placing articles within, the time for heating varying from six to ten minutes.



The Bartlett Portable Gasoline Oven.

Flexible Pot and Kettle Cleaner.

The Clauss Shear Company, Fremont, Ohio, are introducing the cleaner illustrated herewith. It consists of stamped handles hinged at one end to a flexible steel blade and fastened together at the other end by a metal clip. The blade is made of clock spring and the handles of nickel plated steel. It is designed to clean anything, whatever its shape, including corners, angles and flat and round surfaces in any kind of kettles, skillets, sinks, chopping bowls, tables, cupboards, molding boards, rolling pins, bread pans, pie pans and pudding pans. It is suggested that fish are easily cleaned by it and that it is useful in scraping the wall in house-painting time. The point is made that it is not necessary to soil the hands by putting them in hot or greasy water or other offensive contents of the vessel to be scraped, and that danger of cutting or burning the hands is avoided.

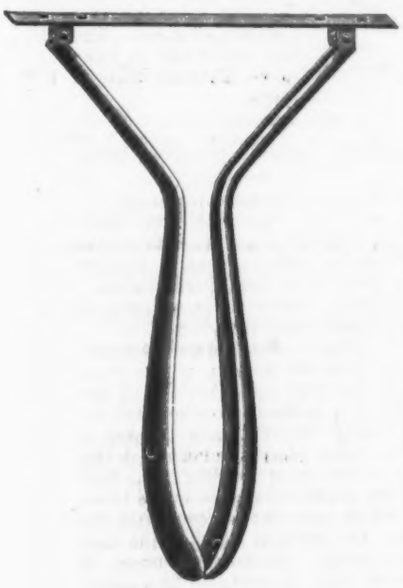


Fig. 1.—Flexible Pot and Kettle Cleaner.

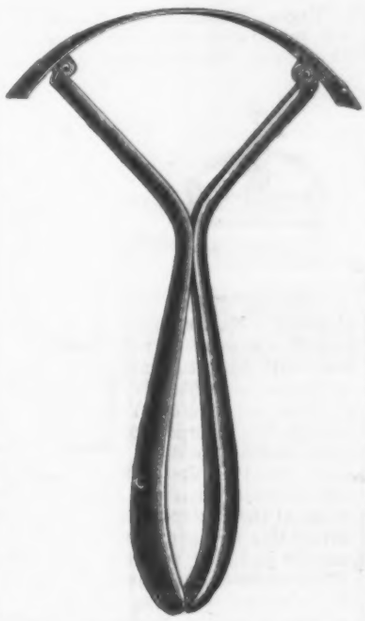


Fig. 2.—As Used for Round Surfaces.

Detective Racket Alarm.

The Racket Alarm Company, 107 Chambers street, are putting on the market a portable burglar alarm and door protector, as shown in Fig. 1. It consists of a nickel plated gong bell within which is the mechanism operating the alarm. The attachment to door or window is simple, being effected by two hinged blades, Fig. 2, being brought into the same plane edgewise and then inserted into the crack between door and casing, and held in place by the expansive force of the spring until released by opening the door. The object of the loop of cord over the door knob is to suspend it when not in use, or when released by the opening of the door to allow the bell to sound clearly without being deadened by contact with the floor. The device is compact, and the makers claim will not injure or deface any wood work.

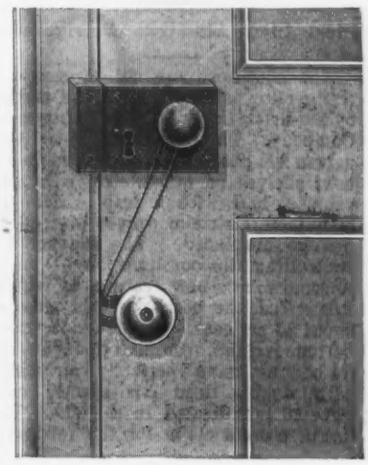


Fig. 1.—Detective Racket Alarm.



Fig. 2.—Hinged Blades at Rear of the Bell.

Woodbury's Automatic Cycle Chain Lubricator.

The accompanying cut represents the above article, to which reference was made in our issue of May 18, as put on the market by M. A. Woodbury, Bradford, Pa. The lubricator consists of a sack containing the lubricant, the sack being clamped to a light steel arm. The arm is fastened by a clamp band to one of the lower rear forks of the bicycle, which runs parallel to the chain, at a point about 3½ inches from the rear of the sprocket wheel, or just so that the wheel will not catch the sack. The arm is adjusted so that the sack will lie upon the lower chain, and so that the movement of the chain will cause the

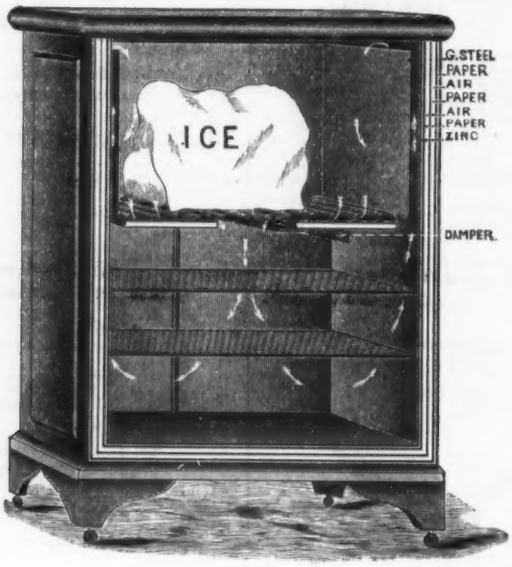


Woodbury's Automatic Cycle Chain Lubricator.

lubricant to work out of the sack upon the chain. The maker claims that with the lubricator and duster the average cyclist's chain will run very easily, with little wear and with little accumulation of dust inside or outside.

Steel Clad Air-Tight Refrigerator.

The accompanying cut represents a refrigerator being put upon the market by the Battle Creek Metallic Refrigerator Company. The refrigerator is built of galvanized steel, with a removable ice box; shelves of woven steel wire galvanized, and with a trap which the manufacturers claim cannot lose off or become misplaced. The damper for controlling the consumption of ice is referred to as a new feature, by which, it is stated, the cost of ice is reduced about 25 per cent. The outside walls, bottom and top, front and doors are described as being perfectly air tight, with double dead air spaces, constructed as indicated in the cut. The manufacturers claim for the refrigerator that there can be no communication with the outside air; that it cannot be effected by changes in temperature; that there is no wood in the ice or provision chambers to decay or to become contaminated; that it is of comparative light weight, and that it has a large storage capacity in proportion to its outside measure. These refrigerators are made in five sizes, from 24 to 34 inches in width, 14 to 20 inches in depth, and from 40 to 47 inches in hight.



Steel Clad Air-Tight Refrigerator.

Interesting Advertising.

A Liverpool, England, firm of coal dealers have a novelty in the shape of an advertising folder; and although similar in form to those used by some concerns in this country it is more extended and differently worded from any that have come to our notice. It is a strip of colored paper folded in size to about 2½ inches square. Each fold as it is opened reveals on the successive pages the following inscriptions: "Look inside." "Where?" "Keep on." "What can it be?" "It's worth kowning." "How can I increase my income?" "Just what I want to know." "Tell me." "Gladly." "Save needless expenditure!" "How?" "Can I?" "Yes." "Twenty per cent. at least!" "How strange." "Is it a fact?" "Never forget it!" "What do you pay for coal?" "Ponder this." "You can save, by paying cash, 20 per cent. at least." "This is a special offer for cash only." Following the foregoing at the end of the folder, occupying the space of two folds, is the firm's offer, giving the price for cash at which they will deliver coal. One is not apt to forget the advertisement after the persistent effort required to arrive at it.

Another Fuel Gas Process.

Through the discovery of Prof. E. B. Stuart, a chemist, at present at the head of the Chicago Milk Bureau of Inspection, Chicago, New York and Denver will, it is claimed, be supplied with a fuel gas that will cost to the consumer one-third less money than any aeriform fluid now manufactured by an oxygenizable process.

For two years Professor Stuart claims to have been working on his new gaseous elements. He has succeeded in forming a stock company of which an Eastern man will be president. Most of the capital stock, which is $10,000,000, is in the hands of New York people, although the incorporators of the company are Chicago men. They include, aside from Professor Stuart, Charles Springer and Charles S. Corning. The name of the incorporation is the Continental Gas Company, and according to articles just filed with the Illinois Secretary of State the company's purpose is to manufacture gas, electricity, and all agencies for producing and furnishing light, heat, power and fuel.

"The new fuel gas is a patent of my own," said Professor Stuart, "and I organized a stock company to put the gas on the market. Plants will be established in Chicago, New York and Denver. The general offices of the company will be in Chicago. I have been experimenting on its manufacture for a long time and now believe I have one of the best fuel gases produced, and at the same time it is exceedingly cheap.

Liverpool papers regard with significance the importation of 500 barrels of American salt.

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Current Hardware Prices.

MAY 31, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horse shoe brand.11@11½%
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star.....45&5%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70%
Boring Machine Augers.....70%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32⅓ quarters, No. 5. $5 ; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18 ; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26 ; No. 2, $18.....35&40%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Bee.....25@25&5%
Double Cut, Shepardson's....45@45&10%
Double Cut, Ct. Valley Mfg. Co....30&10%
Double Cut, Hartwell's, ₩ gro., $5.00..25%
Double Cut, Douglass'.....40&10%
Double Cut, Ives.....60@60&10%

Hollow Augers—

Ives', French, Swift & Co. (Beecher), Douglass'.....33⅓@33⅓ &10%
Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1....31½@31½%, No. 2, 5¢@6¢
Nos. 7 to 14.....60&10%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.....4½@6¢
Concord Axles, solid collar.....5½@7¢
National Tubular Self Oiling.....33⅓&2½
3% cash

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10¼-in., $1.80 ; 12-inch, $2.00 ; 13¾-inch, $2.50 ; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.30
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00 ; No. 1, $15.00 ; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1 ; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@10@75&5%
Standard.....70&5@70&10%
Extra.....60&10@60&10&5%
N.Y.B.&P. Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron..50@50&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....20%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&5@80%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list).....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K.Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&5%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company'
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84 .....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓@35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2½¢

Boxes, Miter.

Spiker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.50, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $3.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....60&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford s...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123. 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. Inch..... 9 10 9x11
Per dos...$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Heiwig's Flat Iron Band.....$3.75
Heiwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers Butchers.*

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's.....80%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....
} 75@77½ &10%

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
} List Jan. 2 1890, 40@40&10%
Bronzed Wrought Butts.....50@50&10%

Calipers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $2.10; 8-gal., $3.10; 10-gal., $3,35 each.....35%

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....₩ 100¢
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
Musket, Waterproof, 1-10's.....50@53¢
G. D.....37@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire..$1.00

Primers—

Berdan Primers, $1.00.....9¢
B. L. Caps (Sturtevant Shells) $1.00.....9¢
All other Primers, $1.20.....9¢

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....35%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges.....50&5&2½%
Rim Fire Military.....15&2½%
Cent. Fire, Pistol and Rifle.....25&5&2½%
Cent. Fire, Military and Sporting 15&5&2½%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....9¢
Blank Cartridges, 32 cal., $3.50.....9¢
Primed Shells and Bullets.....15&5&2½%
B. B. Caps, Round Ball, $1.75.....9¢
B. B. Caps, Con. Ball, Swgd., $2.00.....9¢

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed, Plate, Shallow Socket... } Brass.....55@55&10%
} Others....60@60&10%
Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 1¢

Chain—

Trace, Wagon and Fancy Chains, List revised Oct. 15, 1892..60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3.40	3.35

Less than cask lots, add¼@¾¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&2½%
Cover tTraces.....55&2½%
Cover tHeel Chain.....50&2½%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Oneida Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list March 10, 1893.....60@60&10%
Barnes' Reinforced Sash.....60&10%
Barnes' Victor Sash.....60%

Chalk—

White, case lots. ₩ gr 50¢, small lots.85¢
Red, case lots....₩ gr 67¢ small lots.75¢
Blue, case lots....₩ gr 75¢; small lots 90¢
See also Crayons

Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W. ..... }
New Haven ..... }
Witherby ..... } 75&10@75&10&10%
Mix ..... }
Ohio Tool Co. ..... }
Douglass ..... 75@75&5%
Buck Bros. 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00
Spear & Jackson s ..... $5 to £
Buck Bros. 30%
Cold Chisels, ₱ ℔ ..... 15@16¢

Chucks—
Beach Pat. ..... each, $3.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Balz Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—
Tilton Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
B. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's ..... 75@75&5%
Carriage Makers', P., S. & W Co. ..... 40&10%
Eberhard Mfg. Co. ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—
Bradley s ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Foster Bros. 30%
Schulte, Lohoff & Co. ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 ..... 55&5%
Superior Axle Clips ..... 66⅔&5@70%
Norway Spring Bar Clips, 5-16 ..... 50&5&5%
Wrought Iron Felloe Clips ..... ₱ ℔, 5½¢
Steel Felloe Clips ..... ₱ ℔, 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list ..... 60&2%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—
Chapman Mfg. Company, new list 40%
Medford Fancy Goods Co. ..... 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. ..... 33⅓&40%
Kohler's Magic Oscillating. ₱ doz., $2.00
Kohler's Humane ..... ₱ doz., $1.75

Compasses, Dividers, &c.
Compasses, Calipers, Dividers. 70@70&10%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Calipers, Double 65%
Calipers, Call's Patent Inside 65%
Excelsior 50%
J. Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers ..... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.30; 3-gal., $2.60; 4-gal., $3.00; 6-gal., $3.75 each 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—
Sash—
Common ..... ₱ ℔, 9@10¢
Patent, good quality ..... ₱ ℔, 11@12¢
White Cotton Braided, fair ..... ₱ ℔, 24@25¢
Common Russia Sash ..... ₱ ℔, 12½@13¢
Patent Russia Sash ..... ₱ ℔, 13½@ 14¢
Cable Laid Italian Sash ..... ₱ ℔, 19@20¢
India Cable Laid Sash ..... ₱ ℔, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab. 39¢
Semper Idem, Braided, White. ..... 27@28¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 29¢
Samson—
Braided, White Cotton ..... ₱ ℔, 37¢
Braided, Drab Cotton ..... ₱ ℔, 42¢
Braided, Italian Hemp ..... ₱ ℔, 40¢
Braided, Linen ..... ₱ ℔, 56¢
Tate's Solid Braided—
Hercules, White ..... ₱ ℔, 25¢
Hercules, Drab ..... ₱ ℔, 30¢
Economy, Drab ..... ₱ ℔, 27¢
Economy, White ..... ₱ ℔ 22¢
Ossawan Mills—
Braided, Giant, Whit ₱ ℔, 30¢ 20%
Braided Giant, Drab and Fancy, ₱ ℔ 35¢ 10%
Braided, Crown White, ₱ ℔, 50¢ 50%
Braided, Crown Drab and Fancy, ₱ ℔ 6¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—
Table (H. & B. Mfg. Co.) 40%
Blake's Pattern, ₱ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co. 50%
Acme.
Japanned, ₱ gro., $30 ..... 50%
Nickel Plated, ₱ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ₱ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ₱ gross, $1.75 ..... 25%
Rolling Mill, ₱ gross, 2.50 ..... 25%
Railroad, ₱ gross, 2.00 ..... 25%
Soapstone Pencils, ₱ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—
Meat—
Dixon's, ₱ doz. ..... 40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's, ₱ doz. ..... 40&5%

Nos.	100	150
	$15.00	$18.00

Hale's Pattern, ₱ doz. 70%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American 30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50	$60

Enterprise 25%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter ..... 30@30&5%

Nos.	112	116	118	120	122
Each	$2.00	$2.75.	$3.00	$3.50	$4.00

Miles' Challenge, ₱ doz. ..... 45@45&10%

Nos.	22.00	2	3
	$22.00	$30.00	$40.00

Home No. 1, ₱ doz., $20.00 ..... 55&10%
Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

..... 20@25%
Beef Shavers (Enterprise) 20%
Little Giant (P. S. & W. Co.) 50%
Chadborn's Smoked Beef Cutter, ₱ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ₱ gross $21.00
Slaw Cutters, 2 Knife, ₱ gross 30.00
Kraut Cutters 40%

Tobacco
Champion ..... 20&10&30%
Ail Iron ..... ₱ doz., $4.25
Nashua Lock Co.'s ..... ₱ doz., $18.00, 50&55%
Wilson's 55%
Sargent's ..... ₱ doz., $24.00, 55&10
Acme ..... ₱ doz., $20.00, 40%

Washer—
Smith's Pat. ..... ₱ doz., $12.00, 20&10&10%
Johnson's ..... ₱ doz., $11.00, 33⅓%
Penny's .. ₱ doz.,, Pol. $14; Jap'd, $16, 55%
Appleton's ..... ₱ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Dampers, &c.—
Dampers, Buffalo ..... 40&10%
Buffalo Damper Clips ..... 40&10%
Crown Damper 40%
Excelsior ..... 40&10%

Diggers, Post Hole, &c.—
Samson, ₱ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ₱ doz., $36.00, 20@20&10%
Eureka Diggers ..... ₱ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ₱ doz., $8.50@$9.50
Kohler's Little Giant ..... ₱ doz., $18.00
Kohler's Hercules ..... ₱ doz., $14.00
Kohler's Invincible ..... ₱ doz., $12.00
Kohler's New Champion ..... ₱ doz., $8.00
Scheidler ..... ₱ doz., $18.00
Cronk's Post Bars, ₱ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger ..... ₱ doz., $15.00
Gibbs' National ..... ₱ doz., $12.00
Gibbs' Columbia ..... ₱ doz., $13.00
Gibbs' Imperial ..... ₱ doz., $7.50
Shimer's Hollow Handle .. ₱ doz., $24.00, 50%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ₱ doz ..... $18@$20

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's ..... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 30&10%
Ratchet, Weston's ..... 30@35%
Ratchet, Moore's Triple Action ..... 35@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Dills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Meta list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co. ..... 30@20&10%
Disston's 50%
Buck Bros. 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal ..... 50&5@ 50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat. ..... 30@33⅓%
Crawford's Adjustable 30%
Ellrich's Socket and Ratchet ..... 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .. ₱ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits ..... 30&30&5%
Screw Driver Bits ..... ₱ doz., 50@75¢
Screw Driver Bitts, Parr's .. ₱ gross, $6.25
Fray's Hol. H die Sets ..... No. 3, $12.00, 45%
P. D. & Co.'s All Steel 50%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits ..... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co. 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ₱ ℔	4½¢	5 ¢	2½¢
½ kegs, ₱ ℔	4¾¢	5¼¢	2¾¢
¼ kegs, ₱ ℔	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6¼¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock ..... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ₱ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ₱ gr. 60&10%
Van Sand's Old Pat., $15 ₱ gr. ..... 55&10%
Austin & Eddy No. 2008 ..... ₱ gr., $9.00
Security Gravity ..... ₱ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list. 60%
Metallic Key, Leather Lined ..... 60&10@ 60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots ..... 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined. 50%
No Brand, Red Cedar (in bbls.) .. 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ₱ doz., $36.00 ..... 20%
Lane's ₱ doz., $36.00 ..... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—
Domestic—
Nicholson Files, Rasps, &c. 60&10&5@ 60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) .... 75% (extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&10@70%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70@70&10%
Second quality ..... 75@75&10&5%
Heller's Horse Rasps ..... 50&7½@50&10%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut ..... 50&10%
Arcade Horse Rasps ..... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubs ..... Stubs 1st, 25@30%

Fixtures, Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co. ..... 30&10%
P., S. & W. Co. ..... 50&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—
Saw—
White Vermont ..... ₱ gro., $9.00@$10.00
Red, Polished and Varnished .... ₱ doz., $1.50, 35%

Screen, Window and Door—
Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons ..... 33⅓% 33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5
Phillips' Window Screen Frames ..... 50@50&5%
Bonanza Window Screens .. 50&5@50&10%
Empire Fancy Screen Doors, ₱ doz .. $12

Freezers Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 55%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero ..... 60&10&10%
Boss and Pet ..... 60&10&10&10%
Keystone, P., D. & Co., each, $1.50 ..... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Expert ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 60%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10¢; 2 to 5 gro., 20¢; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15¢; 6 to 12 doz., 20¢; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ₱ 1000 ft.
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water. 12.00

Gates Molasses—
Stebbin's Pattern ..... 80&80&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ₱ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c ..... 60&10%
Starrett's Surface, Center and Scratch. 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge ..... ₱ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ₱ doz., $5.00
Without Scale ..... ₱ doz., $4.00
Wire, Wheeler, Madden & Co. 10%
Wire, Morse's 35%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ₱ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ₱ ℔ 4¢, Pail ₱ ℔ 5¢
Fraser's, in boxes ..... ₱ gr $9.50
Dixon's Everlasting, in bxs.. ₱ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting .... 10-℔ pails, ea. 85¢
Lower grades, special brands, ₱ gr $5.50@$7.00
Axleine, tin boxes ..... ₱ gross $13.00
English Coach, wooden boxes ..... ₱ gross $3.50
English Coach, 5-℔ tin pails. ₱ doz. $3.50
Tiger, wooden boxes ..... ₱ gross $7.00
Tiger, 5-℔ tin pails ..... ₱ doz $2.35

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ₱ gr. $1.75
Pat. Sewing, Short. ₱ doz. ..... 40@50%
Pat. Sewing, Long ..... ₱ doz $1.50
Pat. Peg, Plain Top. ₱ doz. ..... 40@45%
Pat Peg, Leather Top. ₱ doz @50%

Halters—

Covert's, Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ¼-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
Verree.....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

8 ℔ and under...℔ ℔40¢
8 to 5 ℔.....℔ ℔36¢ } 75&10@75&10 &5%
Over 5 ℔.....℔ ℔30¢
Wilkinson's Smiths.....10¼¢@11¢℔ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.85	1.50

60&10&10%

Roggin's Latches.....℔ doz 30¢@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70&70&10%

Wood—

Saw and Plane.....40&10&50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd.℔ gr 4.50
Hickory Firmer Chisel, large.℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd..℔ gr 3.00
Socket Framing Chisel, ass'd.℔ gr 5.00 } 10&10@50%
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75 }
Auger, assorted.....℔ gr 5.00 } 50%
Auger, large.....℔ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50&50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati, Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Peyson's.....40@40&5%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Moore's Elevator.....33⅓%
Moore's Baggage Car Door.....33⅓%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's..... } 40 & 10 @ 50&5%
Buffalo Hammer Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Sargent's & Co.....
P., S. & W. Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%
Schulte, Lohoff & Co.....5—@50&5%

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50..80@80&5%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10@2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 60@60&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60& 5%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro., $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10....℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&5%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap..... { 6 to 12 in., ℔ ℔.. 4¢ / 14 to 20 in., ℔ ℔..3½¢ / 22 to 36 in., ℔ ℔.. 3¢
Screw Hook and Eye..... { ½ in., ℔ ℔ 7½¢ / ⅝ in., ℔ ℔ 5½¢ / ¾ in., ℔ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10@
Plate Hinges { 8, 10 & 12 in., ℔ ℔.....5¢ / "Providence" { over 12 in. ℔ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 70@70& 5%
Am. Axe and Tool Co., S. & O. Pat. }
Chattanooga Tool Co., S. & O. Pat..60& 5&10&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....℔ doz $18....60%

Bit—

Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—

Bals Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—

Motley's Adj. Sash, Medium Size.....℔ doz $1.20, 40%

Hooks—

Cast Iron—

Bird Cage, Sargent's List.... }
Bird Cage, Reading..... } 60&10&10%
Clothes Line, Sargent's list. }
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50&10&10%

Wrought Iron—

Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg.Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Rush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition.....75@75&10&5%
Standard.....60&10&10@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee.....50&10@60%

Huskers—

Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Enterprise Irons, list Jan. 17, 1893....30%
Enterprise Star Irons, list Jan. 17, '93..30%
Crown.....60&10@60&10&5%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3¢@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—

Pinking Irons, ℔ dos., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby..... }
P., S. & W..... } ...75@75&10&5%
Mix..... }
New Haven..... }
Merrill.....60&10@60&10&5%
Douglass.....75&75@5%
Watrous.....15&10@25%

L. & I. J. White.....20&5
Bradley's.....20%
Adjustable Handle.....25@33⅓&%
Wilkinson's Folding.....35@35&5%

Hay and Straw—

Lightning, from jobbers....$3.00@$9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing—

Am. (2d quality), ℔ gr., 1 blade, $7 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓%

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nickel.....$2.00@$2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&15
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.

Davies Extension and Single.....30&5%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.50
Brass Plated, Sq. Lift, Guard.℔ doz $5.50
Cop. Plated, Sq. Lift, Guard..℔ doz $5.50

Bull's Eye Police—

2¾-inch regular.....℔ doz $3.00
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....30%
Skylight Lifters.....35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish.....50%
Chalk.....50%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....35%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..30%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....35&10
Champion Cab. and Combin.....33⅓%
Yale.....net price
Romer's.....25

Door, Locks, Latches, &c.—

R. & E. Mfg. Co., list Mar. 20, 1889..... } 65&10@70% Much
Mallory, Wheeler & Co., list July, '88..... } lower
Sargent & Co., List Aug. 1, '92 } prices
Branford Lock Works..... } often made

Brittan, Grisham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....60&10%
Warner's Burglar Proof. ₱ doz. $8.00, 50%

Padlocks—

List June'10, 1891.....50&2%
Norwich Lock Mfg. Co., old list.....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 506.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₱ doz $9, 50&50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian, Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50&5%
No. 61 line.....60&5%
No. 21 line.....75&10%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₱ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated. ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1888.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₱ gr., $8; No. 105, ₱ gr., $10.....50%
Davis, Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₱ doz, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%	
Jennings'	5.50	6.75	45&45&10%	
Other Machines	2.35	2.75		
Phillips' Patent with Augur	7.00	7.50		
Miller's Falls	7.50			25%

Fluting—

Knox, 4¼ inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Rolls, $2.15.....35%
Eagle, 5¼-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₱ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₱ doz $8.00.....40%
Combined Fluter and Sad Iron. ₱ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Energy's Mfg. Co.'s.....25%
Pure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₱ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₱ doz $36.00
Western Star ₱ doz, No. 2, $36; No. 3 $30.
Weisell.....₱ doz $54.00
Fair and Square.....₱ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10

Mattocks—Regular list. 60&10@60&10&5%

Measures—

Standard Fiberware, No. 1, peck ₱ dozen, $3.50; ½ peck, $3.00.

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List Jan. 1, 1888. 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16 in., $5.50; 18-in., $6
Low-Grade Machines: 10-in. $3; 12-in., $3.25 14-in., $3 50 each

Muzzles—

Safety.....₱ doz, $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92. 80&10&10&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	8¾	8¾	8¾	8¾	8¾	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&10&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	30&10%
Essex	28¢	26¢	25¢	24¢	23¢	40&10&5@50&5%
Lyra	19¢	17¢	16¢	15¢	14¢	40&10%
Snowden	19¢	17¢	16¢	15¢	14¢	40&10%
Vulcan	23¢	21¢	20¢	19¢	18¢	25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
A. C.	25¢	23¢	22¢	21¢	21¢	25&10@33⅓&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	33⅓@33⅓&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	40&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&5&2%
Saranac	23¢	21¢	20¢	19¢	18¢	40&5%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢	10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	35%
Western	23¢	21¢	20¢	19¢	18¢	50%
Empire Bronzed						13@14 ₱ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.50¢	6.50¢ off list
Cold Punched	5.00¢	6.10¢ off list

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—

Best or Government.....₱ ℔ 6¾@7¼¢
U. S. Navy.....₱ ℔ 5¾@6¢
Navy.....₱ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%

Openers, Can—

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $2.75@$3.00
Duplex.....₱ doz 25¢, 15&2%
Lyman's.....₱ doz $3.75, 20%
No. 4, French.....₱ doz $2.25, 55&60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 60%&70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....55&5%
Domestic, ₱ doz $2.00.....45%
Champion, ₱ doz $2.00.....50%

Packing, Steam—

Rubber—

Standard.....70@70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....10¢@11¢ ₱ ℔
Russia Packing.....14¢ ₱ ℔
Italian Packing.....13¢@14¢ ₱ ℔
Cotton Packing.....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 per doz.....5%

Galvanized—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75	
Heiwig's	2.50	2.75	3.00	
Sidney Shepard & Co.	2.35	2.85	3.05	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware—25%

Star Pails, 12 qt.....₱ doz $4.20
Milk, 14 qt.....₱ doz $5.40
Stable, 14 qt.....₱ doz $6.00
Fire Pails, deep.....₱ doz $4.80
Fire Pails, round bottom.....₱ doz $5.40

Standard Fiber Ware—

	Plain.	Decr'd
Water Pails, 12 qt., ₱ doz.	$3.60	$4.00
Dairy Pails, 14 qt., ₱ doz.	4.00	4.50
Fire Pails, No. 1, 12 qt., ₱ doz	4.00	
Fire Pails, No. 2, 14 qt., ₱ doz	4.50	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....₱ ℔ 5½¢
Large sizes.....₱ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....₱ doz $1.75

Roasting and Baking—

Columbia, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....50%

Paper and Cloth—Sand and Emery—

List April 19, 1886.....50&10@50&10&5%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eclipse.....₱ doz 4.25
Eureka, 1883.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State....₱ doz 27.00@30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turn Table.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
72.....₱ doz 4.25
78.....₱ doz 7.00

Potato—

White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils—

Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters'.....10%

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&10%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co.....50&10&50&10&5%

Curtain—

Silvered Glass.....net
White Enamel.....net

Escutcheon—

Iron, list Nov. 11, 1885. 50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain.....60&10%
1¼ and under, Galv.....52½&10%
1½ and over, Plain.....70&10%
1½ and over, Galv.....60&10%
Boiler Tubes, list Oct. 24, 1892.....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing.....50%

Planes and Plane Irons—

Wood Planes—

Molding.....40@40&10%
Bench, First quality.....45@45&10%
Bench, Second quality.....50@50&10%
Bailey's (Stanley R. & L. Co.).....50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting.....20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to $
Buck Bros.....50%
Auburn Thistle.....
Ohio.....} ....30&10%
Sandusky.....
L. & I. J. White.....25%
Stanley R. & L. Co.....60&10%

Plates—

Felloe.....₱ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz.....40%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@50%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&5%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....40&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₱ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....₱ doz $6.00
Bishop's Monarch.....₱ doz $4.50
Bishop's Pioneer.....₱ doz $4.00
Bishop's American.....₱ doz $3.00
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75
Bolding.....₱ doz $6.00
Metallic Horse Poke.....₱ doz., $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₱ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₱ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₱ gro, $6.00, 10%
Gem.....₱ gro, $4.50, 10%
Gold Medal.....₱ gro, $6.00, 20%
Lustro.....₱ gro, $4.75
Ruby.....₱ gro, $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ℔ 8¢
Boynton's Noon Day.....₱ gro $13.00
Parlor Pride Stove Enamel, ₱ gro
Yates' Liquid, 2 3 5 10 gal
₱ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₱ ℔ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.80
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish, ₱ gro $9.00
Bonnell's Paste Stove Polish, ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₱ ℔ 12¢
Black Flag.....₱ gro $7.20
Black Flag, 5 and 10 ℔ pails..... ₱ ℔ 12¢
Black Flag, liquid, in bottles, ₱ gro $8.00
Diamond Rock Nickel Cleaner..... ₱ gro $10.80
Raven Paste.
5-lb. pails, (per case of 6 or 12), ₱ ℔ 12¢
Less than case.....₱ ℔ 15¢
Liquid, 6 oz. bottles.....₱ gross, $3.00
Liquid, 8 oz. bottles.....₱ gross, $9.00
Water Polish.....₱ gross, $5.25

Poopers, Corn—

Round or Square, 1 qt., ₱ gr $10.00@10.50
Round or Square, 1½ qt., ₱ gr $15@$15.50
Round or Square, 2 qt., ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each..... .60
Rifle, 1 ℔ each..... .30
Rifle, ½ ℔ each..... .15
Rifle, ¼ ℔ each..... .10

In Kegs—

Rifle, 25-℔ kegs.....$4.00
Rifle, 12½-℔ kegs..... 2.25
Rifle, 6¼-℔ kegs..... 1.25
Duck, 25-℔ kegs..... 5.00
Duck, 12½-℔ kegs..... 2.75
Duck 6¼ ℔ kegs..... 1.50

Presses—
Fruit and Jelly—
Enterprise Mfg. Co. 25%
Henis ..... ₩ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

Pullers Nail—
Scranton ..... ₩ doz., $18.00, 33⅓%
Curtis Hammer ..... ₩ doz., $9.00
Giant, No. 1 ..... ₩ doz., $18.00, 10%
Giant, No. 2 ..... ₩ doz., $15.00, 10%
Pelican ..... ₩ doz., $9.00, 25%
Eclipse ..... Each, $2.00, net
Economy ..... ₩ doz., $6.00

Pulleys—
Hot House. Awning, &c. ..... 66⅔@70%
Japanned Screw ..... 60&10&10%
Brass Screw 70%
Japanned Side ..... 60&10&10%
Japanned Clothes Line ..... 60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70 ..... 50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating 60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00 ..... 40%
Shade Rack 45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25 ..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense 60%
Empire 60%
Ideal, Nos. 2, 4, 10 & 15 } 30% less 1¢ ₩
Acme ..... } doz net.
Star ..... }
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper G'ds. .75@75&10%

Punches—
Saddler's or Drive, good ..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co.'s Springfield Socket. 65%
Spring, good quality ..₩ doz., $2.50@$2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring ..... 50&5%
Bemis & Call Co.'s Check 55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44 ..... 55%
Tinners' Hollow Punches, P., S. & W. Co. ..... 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches ..... 20&2%
Niagara Solid Punches 55%

Rail—
Sliding Door, Wr't Brass ....₩ ₺, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet ..... $3.15 2.70 3.25 Net
Terry's Steel Rail ..... ₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot ..... 50&2%
Carrier, double braced, Steel Rail, ₩ foot ..... 3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft. 7¢
Moore's Steel Rail ..... 25&10%
Moody Steel Rail ₩ ft., 5¢ 45%

Rakes—
Cast Steel, Association g'ds. .70@70&5&2%
Cast Steel, outside g'ds, ... 70@70&5&2%
Malleable ..... 70@70&5%
Gibbs' Lawn Rake ..... ₩ doz., $4.90
Gibbs' Canton Lawn Rake ..₩ doz., $3.75
Gibbs' Acme Lawn Rake ..₩ doz., $4.75
Gibbs' Favorite Lawn Rake ..₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1 ..... ₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake ..... ₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholm and Butcher, $10 to £.... 10%
Jordan's AAAI, new list ..... Net
Jordan's Old Faithful, new list ..... Net
Galvanic ..... ₩ doz., $15.00
Electric Cutlery Co ..... Net
Campbell Cutlery Co 50%

Razor Strops—See *Strops, Razor.*

Rings and Ringers—
Bull Rings—
Union Nut Co 55%
Sargent's ..... 75&10%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ulrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers ..₩ doz $2.00
Top of the Hill Rings ..₩ doz $1.25
Hill's Improved Ringers ..₩ doz $1.25
Hill's Old Style Ringers ..₩ doz $1.12½
Hill's Tongs ..₩ doz $3.00
Hill's Rings ..₩ doz bxs $1.00
Perfect Rings ..₩ doz bxs $1.50
Perfect Ringers ..₩ doz $2.15@$2.25
Blair's Hog Ringers ..₩ doz $2.00
Blair's Hog Rings ..₩ doz 90¢@$1.00
Champion Rings ..₩ doz $2.00
Champion Rings, Double ..₩ doz $2.25
Brown's Ringers ..₩ doz $2.00
Brown's Rings ..₩ doz $1.15@$1.25
Electric Hog Rings ..₩ doz boxes $1.50
Electric Hog Ringers ..₩ doz $2.00
Major Rings ..₩ doz $1.25
Major Ringers ..₩ doz $2.00

Rivets and Burrs—
Norway Iron, t Nov. 17, '87....60&10%
Second quality 70%
Copper ..... 60@60&10%
Coppered Iron, Bettina Brand ..... 50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass ..... 25@30%
Stair, Black Walnut ..... ₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼@½¢ on large lots; terms, 1% 5 for cash.
Manilla, 7-16 in. diam. and larger ₩ ₺ 9½¢
Manilla ..... ⅜ in. ₩ ₺ 10 ¢
Manilla ..... ⅜ and 5-16 in. ₩ ₺ 10½¢
Manilla, Tarred Rope ..... ₩ ₺ 9 ¢
Manilla, Hay Rope ..... ₩ ₺ 9 ¢
Sisal ..... 7-16 inch and larger ₩ ₺ 7¾¢
Sisal ..... ⅜ in. ₩ ₺ 8½¢
Sisal ..... ⅜ and 5-16 in. ₩ ₺ 8¾¢
Sisal, Hay Rope ..... ₩ ₺ 7¾¢
Sisal, Tarred Rope ..... ₩ ₺ 7¾¢
Sisal, Medium Lath Yarn ..... ₩ ₺ 7¾¢
New Zealand..7-16 in. & larger ₩ ₺ 7¾¢
New Zealand ..... ⅜ inch, ₩ ₺ 7¾¢
New Zealand..⅜ and 5-16 inch, ₩ ₺ 8¼¢
New Zealand, Hay Rope ..... ₩ ₺ 7¼¢
New Zealand, Tarred Rope ..... ₩ ₺ 6¾¢
Cotton Rope ..... ₩ ₺ 13½@16¢
Jute Rope ..... ₩ ₺ 6¾@7¢

Wire—
List February, 1892. All kinds 45%

Rules—
Boxwood ..... 30&10&10%
Ivory ..... 50&10%
Starrett's Steel Rules and Straight Edges ..... 25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Disston's Circular ..... 45@45&5%
Disston's Cross Cut, list Jan. 1, '93. 40&10%
Disston's Hand 25%
Woodrough & McFarlin.
Hand, Panel and Rip ..... 25&10%
Cross Cuts, list Jan. 1, 1893 ..... 45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip ..... 30&10%
Cross Cuts, list Jan. 1, 1893 ..... 45&10%
Atkins' Circular ..... 50&10%
Atkins' Cross Cuts, new list 40%
Atkins' Mulay, Mill and Drag ..... 50&10%
Atkins' One-Man Saw 40%
Atkins' Wood Saws 40%
Peace Circular and Mill ..... 45@45&5%
Peace Hand Panel and Rip ..... 25@25&5%
Peace Cross Cuts, list Jan. 1, '93 ..45&10%
Richardson's Circular and Mill. 45@45&5%
Richardson's X Cuts, list Jan. 1, '93. 45&10%
Richardson's Hand, &c ..... 25@25&5%
C. E. Jennings & Co.'s brand 25%

Hack Saws—
Griffin's, complete ..... 40&10@50
Griffin's Hack Saw Blades ..... 40&10@50
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Bullders' and Cab Makers' $15, 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161 ....₩ doz $6.50@$7.00
Union Platform, Plain ..... $2.10@2.20
Union Platform, Striped ..... $2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10
Riehle Bros.' Platform 40%

Scale Beams—See *Beams, Scale.*

Scissors, Fluting 45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 30&10%
Box, 1 Handle ..... ₩ doz $2.25@$2.50
Box, 2 Handle ..... ₩ doz $3.00@$3.25
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10&60%
Ship, Common ..... ₩ doz $3.50 net
Ship, R. I. Tool Co 10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—See *Drivers, Screw.*

Screws—
Bench and Hand—
Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ..... ₩ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Hand, Grand Rapids, list 35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890 ..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 ..... 80@80&5%
Hand Rail, Sargent's ..... 70&10%
Hand Rail, H. & B. Mfg. Co. ....70&10@75%
Hand Rail, Am. Screw Co 75%

Jack Screws—
Jack Screws, Millers Falls list. 50@50&10%
Jack Screws, P., S. & W 35%
Jack Screws, Sargent 70%
Jack Screws, Stearns' ..... 40@40&10%

Cork—
Humason & Beckley Mfg. Co. .40&10@50%
Williamson's ..... 33⅓@33⅓&5%
Detroit Cork Screw Co 33⅓%

Machine—
Flat Head Iron 65%
Round Head Iron 60%

Wood—
List January 1, 1891.
Flat Head Iron 70%
Round Head Iron 65%
Flat Head Brass 70%
Round Head Brass 65%
Flat Head Bronze 70%
Round Head, Bronze 65%
} Extra 10 or 10& 10& often given.
Rogers' Drive Screws ..... 33⅓&5

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain ..... 40&5@40&10%
Grass ..... 40&10&50%

Scythe Snaths—See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 ..... 60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 ..... 45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18 ..... 25%
Henry's Combination Haft ..₩ doz $6.50
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50 ..70&10&5%

Nail—
Square ..... ₩ gr. $4.00@$4.25
Round ..... ₩ gr. $3.25
Buck Bros 27½%
Cannon's Diamond Point ..₩ gr. $12, 20%

Rivet—
Regular list 70%

Saw—
Stillman's Genuine ....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $5.25 ..... 55%
Common Lever ..... ₩ doz $2.00, 45&50%
Morrill's No. 1, $14.00 ..... 40&20%
No. 11, $15.50 ..... 40&20%
Nos. 5 and 4, Cross Cut, $22.50 ..40&20%
No. 5, Mill, $30.00 ..... 40&20%
No. 10, $15.00 ..... 40&20%
Leach's..No. 0, $8.00; No. 1, $15..15&20%
Nash's ..... 20&10@20&10&10
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 45%
Bemis & Call spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 20%
Bemis & Call Co.'s Cross Cut ..... 30&5%
Aiken's Genuine ..... $13.00, 50&10@60%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold ..... 40&10@50%
Atkin's Lever ..... ₩ doz Nos. 1, $6.00
Atkin's Criterion ..... ₩ doz Nos. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Kohler's Royal ..... ₩ doz $7.00
Kohler's Giant Royal ..... ₩ doz $12.00
Crescent ..... ₩ doz $3.00
Lloyd's Acme ..... ₩ doz $15, 40&10%
Taintor Positive ..... ₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles ...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%
Goodell's ₩ doz. $9.00 ..... 25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears ..... 33⅓&5
Cast Steel Trimmers:
First quality ..... 80@80&10%
Second quality ..... 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears ..... 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel ..... 2..
Hatch Cutlery Co., Solid Steel Forged. 60%
Davenport Cutlery Co ..... 60@60&10%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co ..... Net
Campbell Cutlery Co., Jap'd 75%
Nickel Plated 65%

Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears ..... 20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hook—
Disston's Combined Pruning Hook and Saw ..... ₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 ..... 20&10%
E. S. Lee & Co.'s Pruning Tools. 50&10@70%
Pruning Shears, Henry's Pat., ₩ doz. $3.75@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.5
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50, 33⅓
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co 60%
Levin Pruner No. 1, $15.00 ₩ doz 40&2%
Levin Pruner No. 2, $21.00 ₩ doz..40&2%

Tinners', &c.—
Shears and Snips (P. S. & W.) ..... 20@25&5
Snips, J. Mallinson & Co ..... 33⅓&5

Sheaves—
Sliding Door—
M. W. Co., list July, 1888. ...50&10@60&5
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&5%
Patent Roller ..... 60&10&5%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&5%
Moore's Anti-Friction 50%

Sliding Shutter—
R. & E., list Dec. 18, 1885 ..... 60&10&5%
Sargent's list 70%
Reading list ..... 60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge ..... 25&10&5%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list) ..... 20&10&5%
Prize ..... 40&5%
Star, Club, Rival and Climax Brands. ..... 33⅓&10&5%
Smokeless brand, 12, 10, 16 gauge. ..... 33⅓&10&5%
Trap brand, 12 and 10 gauge..33⅓&10&5%
Selbold's Comb. Shot Shells ..... 15&5%
Brass Shot Shells, 1st quality ..... 60&5%
Brass Shot Shells, Club, Rival, Climax. ..... 65&5%

Shells, Loaded—
Standard List, July 19, 1890 ..... 40&10&10@40&10&10&5%

Ship Tools—
L. & I. J. White ..... 20&5%

Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State and Bryden's Boss, at factory $4.00
Bryden's Frog Pressure, at factory..$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots ..... ₩ ₺ 9¢
1000 ₺ lots ..... ₩ ₺ 9½¢
500 ₺ lots ..... ₩ ₺ 10¢

Shot—
In ton lots 2% discount of list price (3% if made).

	Small lots.
Drop, up to B, 25-₺ bag	$1.45
Drop, up to B, 5-₺ bag	.35
Drop, B and larger, 25-₺ bag	1.70
Drop, B and larger, 5-₺ bag	.40
Buck and Chilled, 25-₺ bag	1.70
Buck and Chilled, 5-₺ bag	.40
Dust Shot, 25-₺ bag	2.00
Dust Shot, 5-₺ bag	.45

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 30%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&5%
Griffith's Solid C. S. R. R. Goods 20%
St. Louis Shovel Co ..... 20@20&7½%
Hussey, Binns & Co ..... 15@20%
Hubbard & Co ..... 20@20&7½%
Lehigh Mfg. Co ..... 50&10%
H. M. Myers Co 30%
Payne Pettebone & Son ..... 33⅓&5%
Remington's (Lowman's Pat.) 40&10&50%
Rowland's Black Iron..50&10@50&10&5%
Rowland's Steel ..... 60&5@60&10%
Terra Haute Shovel & 30%

Shovels and Tongs—
Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60&10&10%

Sieves—
Mann's Tin Rim ..... 50&10%
Buffalo Metallic, S. S. & Co ..... 50&10%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $18.00@$20.00
Electric Light..₩ doz $1.50; ₩ gro $15.00
A. & W. Sifters ..... ₩ gr $15.00
Hunter's Genuine, ₩ doz $1 75, ₩ gr $16.50

Sieves, Wooden Rim—

	Iron	Plated
Mesh 18, Nested, ₩ doz	$0.80	$1.00
Mesh 20, Nested, ₩ doz	.95	1.10
Mesh 24, Nested, ₩ doz	1.15	1.35

Sinks, Wrought Steel—
Columbus, Painted or Unpainted ..... 30@30&10 %
Columbus, Galvanized and Enameled. ..... 50@50&10 %
New Era, Painted ..... 40&10@50&5 %
New Era, Galvanized and Enameled.. ..... 60&10&10@70&5 %

Skeins, Thimble—
Western list ..... 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co 60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—
School, by case ..... 50&10@50&10&10%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel ..... ₩ doz $34.00 40&10
Lots of 6 doz 50%

Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.)....65%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph.33⅓%
John Frots Snaps....75@75&5%

Snaths—
Scythe....50&2@50&5&2%

Soldering Irons—
See *Irons, Soldering.*

Spittoons, Cuspidors, &c.
Standard Fiberware—
Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 52, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—
See *Shaves, Spoke.*

Spoke Trimmers—
See *Trimmers, Spoke.*

Spoons and Forks—
Tinned Iron—
Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—
months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½%

Miscellaneous—
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No. 24 German Silver....50&10&5%
No. 50 Nickel Silver....50&5%
No. 49 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&5%
18% Rogers' German Silver....60&5%
20% Rogers' Nickel Silver....50&5%
German Silver....50&50&5%
German Silver, Hall & Elton..50&5% cash
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—
Door—
Torrey's Rod, 30 in....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $5.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓%

Carriage, Wagon, &c.—
Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—
Steel and Iron, Nickel-Plated....80&10&10@80&25%
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—
Fodder—
Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25

Lemon—
Orcelain Lined, No. 1....₱ doz $6.00 25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Dunlap's Improved....₱ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50&50&5%
King....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co., Glass....₱ gro. $9.00

Standard Fiber Ware—
See *Ware, Standard Fiber.*

Staples—
Barbed Blind, ¼ in. and larger. ₱ 2.7@7½¢
Barbed Blind, ⅝ in....₱ ₤ 8@8½¢
Fence Staples, Galvanized, Same price as B'rb Wire
Fence Staples Plain, See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards....40&10@50%

Stocks and Dies—
Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stops, Bench—
Morrill's, ₱ doz., Nos. 1, $9.50 @2, $12.00 40&20%
Hotchkiss's....₱ doz $6, 10@10&10%
Weston's, No. 1, $10 No. 2, $9, 25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%

Stone—
Stones, Grind—See *Grindstones.*
Scythe Stones—
Pike Mfg. Co., list April, 1892....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—
Pike Mfg. Co:
Hindostan No. 1, ₱ ₤....8¢
Sand Stone....5¢
Turkey Oil Stone, 4 to 8 in....80¢
Turkey Slips....$3.00
} 40@40&10%
Lily White Washita....60¢
Rosy Red Washita....60¢
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50
} 33⅓@33⅓&10%
Lake Superior....₱ ₤ 13¢
Lake Superior Slips....₱ ₤ 20¢

Stove Polish—
See *Polish, Stove.*

Stretchers Carpet—
Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—
Genuine Emerson....60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's....20%
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co....Net
Campbell Cutlery Co....Net

Stuffer, Sausage—
Miles' Challenge, ₱ doz $20....50&50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93....25%
Silver's....40&10%

Sweepers, Carpet and Lawn—
Carpet—
Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen, Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Goshen....₱ doz $21.00
Supreme....₱ doz $22.00
Easy....₱ doz $22.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....₱ doz $30.00
Banner....₱ doz $22.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
The Rapid....₱ doz $22.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
25 dozen in 6 months....₱ doz $3.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—
Thompson Mfg. Co....30%

Swings—
Davies Lawn....25%

Tacks, Brads &c.—
List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....60%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....62½%
Tinned or Coppered....66⅔%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....40%
Tin Capped Nails....50%
Extra discount 25&2%

Miscellaneous—
Double Point....90@90&10%
Wire Carpet Nails....50&10%
Claw Handle Carpet....₱ gross $4.00
Bonnie Blue....₱ box 1.50
Bill Nye Brad Box....4.00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00.
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60.00.
} 60&5%
Upholsterers' Nails....50&10%

Wire Brads and Nails
Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%
See also *Nails, Wire.*

Tanks, Oil—
Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....50&10%

Tapes, Measuring—
American....40@40&5%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—
Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.
Standard Wire, list....50&10&5%

Tinners' Shears, &c —
See *Shears, Tinners' &c.*

Tinware—
Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—
See *Cutters, Tobacco.*

Tools—
Coopers'—
Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—
Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall. Iron Socket Peavies..₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—
Atkins', new list....40%

Transom Lifters—
See *Lifters, Transom.*

Traps—
Game—
Newhouse....40@40&5%
Oneida Pattern....70&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—
Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cyclone....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75

Fly—
Harper, Champion or Paragon....₱ doz. $1.75, ₱ gro. $16.50
Balloon, Globe or Acme....₱ doz. $1.50, ₱ gro. $13.50

Triers—
Butter and Cheese....25%

Trimmers, Spoke—
Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—
Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering..25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40%
Barnes' Barrel Trucks....40%

Tubes, Boiler—
See Pipe

Twine—
Flax Twine—
	Pc.	R.
No. 9, ¼ and ⅛ ₤ Balls	24¢	21¢
No. 12, ¼ and ⅛ ₤ Balls	22¢	20¢
No. 18, ¼ and ⅛ ₤ Balls	20¢	18¢
No. 24, ¼ and ⅛ ₤ Balls	20¢	20¢
No. 36, ¼ and ⅛ ₤ Balls	18¢	22¢

No. 264 Mattrass, ¼ and ⅛ ₤ Balls 55@55&5%
Chalk Line, Cotton, ⅛ ₤ Balls....25¢
Mason Line, Linen, ⅛ ₤ Balls....55¢
2-Ply Hemp, ¼ and ⅛ ₤ Balls (Spring Twine)....15¢
3-Ply Hemp, 1 ₤ Balls....16¢@16¢
3-Ply Hemp, 1⅛ ₤ Balls....15¢@15¢
Cotton Wrapping, 5 Balls to ₤....15¢@16¢
2, 3, 4 and 5 Ply Jute, ⅛ ₤ Balls....10¢
Wool....6½¢@8½¢
Paper....13¢@17¢
Cotton Mops, 6, 9, 12 and 15 ₱ to doz..18¢

Vises—
Solid Box....50&10@60%

Parallel—
Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....50%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Frentiss....20@25%
Simpson's Adjustable....40%
Moore's....30%
Massey Quick Action....20@25%

Saw Filers—
Bonney's, Nos. 2 & 3, $15.00....40&10%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓@35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₱ doz., Nos. 110, $10.00; 120, $15.00....50&10&10&5%

Miscellaneous—
Phœnix Vises....33⅓%
Phœnix Hand Vises....₱ doz $3.00, 33⅓%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises....each $3.01, 40%
Massey Combination Pipe Vise....40%

Wads—Price Per M.
U.M.C.&W.R.A.—B. E., 11 up..68¢
U.M.C.&W.R.A.—B. E., 9&10..82¢
U.M.C.&W.R.A.—B. E., 8....96¢
U.M.C.&W.R.A.—B. E., 7....$1.10
U.M.C.&W.R.A.—P. E., 11 up..1.15
U.M.C.&W.R.A.—P. E., 9&10..1.50
U.M.C.&W.R.A.—P. E., 8....1.70
U.M.C.&W.R.A.—P. E., 7....1.80
Eley's B. E., 11 and larger....$1.70@$1.75
Eley's P. E., 12 to 20....3.00@3.10
Dis. 30&2½%

Wagon Boxes—
See *Boxes, Wagon.*

Wagon Jacks—
See *Jacks, Wagon.*

Ware, Hollow—
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&10%
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60&10&10%
Boilers and Saucepans....40&5%

Enameled—
Agate and Granite Ware, list Jan. 1, 1889....33⅓&10%
Ironclad Enameled Ware....dis 33⅓&10%

Kettles—
Galvanized Tea-Kettles—
Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber—
	Per Doz. Plain.	Decorated.
Wash-Basins, 10½ in.	$1.80	2 00
Wash-Basins, 12 in.	2.00	2.50
Keelers, 11¼ in.		3.50
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—
Spittoons No. 2, ₱ doz....$6.00
Basins, Ringed, ₱ doz., No. 2....2.80
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest....$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest....$2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest....$1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set....$1.90
See also Pails.
Dis. 30&2½%

Silver Plated, Hollow—
4 mo. or 5% cash in 30 days.
Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co....
Rogers & Brother....
} 40&5&2½
Hartford Silver Plate Co....
William Rogers Mfg. Co....
} 40&5&2½

Washers—
Size hole	5-16	⅜	½	⅝	to 1¾
Washers	5½	4½	3½	2½	

In lots less than 200 ₱, ₱ ₤, add ½¢, 5-₱ boxes 1¢ to list.

Washer Cutters—
See *Cutters, Washers.*

Water Coolers—
See *Coolers, Water.*

Wedges—
Iron....₱ ₤ 3½¢
Steel....₱ ₤ 5½¢

Weights, Sash—
Solid Eyes....₱ ton $18.00@$19.00

Well Buckets Galvanized—See *Buckets, Well, Galvanized.*

Wheels Well—
8 in., $2.00 10 in. $2.50 12 in $2.75

Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving...	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whalebone.	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 117	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

A large variety of cheaper grades.....$0@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Per dozen.

Wire and Wire Goods—

Iron—

Market,
Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18, 75&5%
Galv., Nos. 0 to 18, 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18, 70@70&10%
} Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd, Nos. 16 to 18, 80%
Bright and Ann'd, Nos. 10 to 26, 80&5%
Br. and Ann'd, Nos. 27 to 36, 82½&5%
Tinned, 65&10%
} Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ₤....4½¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.....60@70¢ ₩ ₤

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85@85&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft. $1.75@$2.00
Galvanized Wire Netting.....75@75&10%

Wire, Barb—

See Trade Report.

Wire Rope—See *Rope. Wire.*

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....55&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
} 75&10@80%

Bemis & Call's:
Pat. Combination Bright.....40&5%
Pat. Combination Black.....40 & 10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10 %
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination.....30%
Boardman's.....30%
Always Ready.....35&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Eagle.....50&10%
Acme, Bright.....50&5%
Acme, Nickeled.....40&5%
Hercules.....70@70&5%
Walker's.....55&5%
Diamond Steel.....55&5%
Cincinnati Brace Wrenches.....25&10%
Tafts Vise Wrench.....55&10&5%

Wringers, Clothes—

Am. Wringer Co.'s list, Jan. 3, '93..2% cash
Colby WringerCo., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list Jan. 1, 1893..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% Cash

Wrought Goods—

Staples, Hooks, &c., list March 17, 1893 85&10@85&10%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	50
Linseed, City, boiled	..	@	53
Linseed, Western, raw	..	@	50
Lard, City, Extra Winter	86	@	..
Lard, City, Prime	85	@	86
Lard, City, Extra No. 1	65	@	70
Lard, City, No. 1	55	@	..
Lard, Western, prime	85	@	..
Cotton-seed, Crude, prime	..	@	48
Cotton-seed, Crude, off grades	40	@	45
Cotton-seed, Summer Yellow, prime	51	@	52
Cotton-seed, Summer Yellow, off grades	45	@	50
Sperm, Crude	..	@	97½
Sperm, Natural Spring	..	@	..
Sperm, Bleached Spring	..	@	..
Sperm, Natural Winter	1.00	@	1.03
Sperm, Bleached Winter	1.05	@	1.08
Whale, Crude	..	@	..
Whale, Natural Winter	55	@	56
Whale, Bleached Winter	..	@	58
Whale, Extra Bleached	59	@	60
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	40	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	42	@	43
Menhaden, Bleached W'ter	45	@	..
Menhaden, Extra Bleached	48	@	..
Tallow, City, prime	60	@	65
Tallow, Western, prime	..	@	60
Cocoanut, Ceylon	..	@	6
Cocoanut, Cochin	..	@	6¼
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified	₩ ₤	5½@	5½
Bank per gal	40	@	41
Straits	41	@	42
Olive, Italian, bbls	58	@	60
Neatsfoot, prime	75	@	80
Palm, prime, Lagos	₩ ₤	7¾@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test	7¼@		8
Black, 29 gravity, summer	6	@	6½
Cylinder, light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½@24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½@		8
Paraffine, red	9½	@	10½

Paints and Colors—

Barytes, Foreign, ₤ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial	₩ ₤	6	@ 8
Blue, Chinese		40	@ 50
Blue, Prussian		25	@ 40
Blue, Ultramarine		8	@ 25
Brown, Spanish		½@	1
Brown, Vandyke, Amer		3	@ 3½
Brown, Vandyke, English		6	@ 8
Carmine, No. 40, in bulk		2.75	@ ..
Carmine, No. 40, in boxes or barrels		2.85	@ ..
Carmine, No. 40, in ounce bottles		3.75	@ ..
Chalk, in bulk	₩ ton	2.40	@ 2.50
Chalk, in bbls.	₩ 100 ₤	33	@ 40
China Clay, English	₩ ton	13.00	@18.00
Cobalt Oxide, prep'd		9.00	@11.00
Cobalt Oxide, black, lots 100 ₤		1.90	@ ....
Cobalt Oxide, black, less 100 ₤		1.96	@ ....
Green, Paris, in bulk		10	@ 10½
Green, Paris, 170 @ 175 ₤ kegs		10½@	11
Green, Paris, small pack		12	@ 17
Green, Chrome, ordinary		6	@ 12
Green, Chrom's, pure		22	@ 25
Lead, Eng., B.B. white		8½@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ₤		7	@ 7¼
Kegs, lots 500 ₤ to 5 tons		6¼@	6¾
Kegs, lots 5 tons to 12 tons		6¾@	6¾
Kegs, lots 12 tons and over		6¼@	6½
Lead, White, in oil, 25 ₤ tin pails, add to keg price		..	@ ½
Lead, White, in oil, 12½ ₤ tin pails, add to keg price		..	@ 1
Lead, White, in oil, 1 to 5 ₤ assorted tins, add to keg price		..	@ 2½
Lead, Red, bbls. and ½ bbls		6	@ 7
Lead, Red, kegs		6¼	@ 7¼
Litharge, kegs		6¼	@ 7¼
Litharge, bbls. and ½ bbls		6	@ 7

TERMS, &c.—Lead and Litharge.—On lots of 500 ₤ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, American	½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8½	@	8½
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ₤	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ₤	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1¾	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered	₩ ₤	1½	@ 1¾
Talc, French		..	@ 1½
Talc, American		1½	@ 1¾
Terra Alba, Fr'ch. ₩ 100 ₤		95	@1.25
Terra Alba, English		70	@ 80
Terra Alba, American No. 1		65	@ 75
Terra Alba, American No. 2		45	@ 50
Umber, Turkey, Burnt and Powdered	₩ ₤	3½	@ 4
Umber, Turkey Bnt. Lm		2¾	@ 3
Umber, Turkey, Raw and Powdered		3½	@ ....
Umber, Turkey, R'w Lumps		2½	@ 2¾
Umber, Turkey, Bnt. Amer		1½	@ 1½
Umber, Turkey, R'w Amer		1½	@ 1½
Yellow, Chrome		10	@ 25
Vermilion, American Lead		11½	@ 12
Vermilion, Quicks'er, bulk		57	@ ..
Vermilion, Quicks'er, bags		58	@ ..
Vermilion, Quicksilver am'r pkgs		62	@ ..
Vermilion, English Import		85	@ 90
Vermilion, Imitation, Eng		8	@ 35
Vermilion, Trieste		90	@ 92½
Vermilion, Chinese		92½@	95
Whiting Common, ₩ 100 ₤		37½@	42½
Whiting Gilders'		45	@ 55

Zinc, American, dry	₩ ₤	6½@	..
Zinc, French, Red Seal		7½@	.
Zinc, Frech, Green Seal		9	@ ..
Zinc, Frech, V. M. X		..	@ 7
Zinc, Antwerp, Red Seal		7½@	..
Zinc, Antwerp, Green Seal		7½@	..
Zinc, German, L. Z. O		6½@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over		10½@	11¼
lots less than one ton		11	@ 11½
Zinc, V. M. in Poppy Oil, Red Seal		..	@ ..
lots of 1 ton and over		10	@ 10¼
lots of less than 1 ton		10½@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18¼
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01½@		.01¾
In tubs	.01¾@		.01¾
In tin cans	.01¾@		.02¼
In bladders	.01¾@		.02½

Spirits Turpentine—

In regular bbls	31½@		31½
In machine bbls	31½@		32

Glue—

Low Grade	₩ ₤	8	@ 10
Cabinet		12	@ 14
Medium White		13	@ 15
Extra White		17	@ 20
French		10	@ 22
English		10	@ 15
Irish		12	@ ..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

MAY 31, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:
- ⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in.... ₩ ℔ 1.80 @ 1.90¢
- Refined Iron: ⅜ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in. ₩ ℔ 1.90 @ 2.00¢
- 1 to 6 in. x ¼ and 5-16..... ₩ ℔ 2.10 @ 2.20¢
- Rods—⅜ and 11-16 round and sq. ₩ ℔ 2.00 @ 2.10¢
- Bands—1 to 6 x 3-16 to No. 12.... ₩ ℔ 2.20 @ 2.30¢
- "Burden Best" Iron, base price. ₩ ℔.... ...3.00¢
- Burden's "H. B. & S." Iron, base price..... ₩ ℔.. .....2.80¢
- "Ulster"..... ₩ ℔.....3.00¢
- Norway Bars..... 3.75 @ 4.00¢
- Norway Shapes..... 4.50 @ 5.00¢

Merchant Steel from Store—

	Per ℔
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

	Common American.	R. G. Cleaned American.
Nos. 10 to 16..... ₩ ℔	2¾ @	3½¢
17 to 20..... ₩ ℔	3 @ ...	3¼¢
21 to 24..... ₩ ℔	3¼ @	3½¢
25 and 26. ... ₩ ℔	3⅜ @	3⅝¢
27..... ₩ ℔	3½ @	3¾¢
28..... ₩ ℔	3⅝ @	3⅞¢
American B. B..... ₩ ℔	4¢ @ 4½¢	

Russia, Planished, &c.

- Genuine Russia, according to assortment..... ₩ ℔ 12¢ @ 13¢
- Patent Planished ..... ₩ ℔ A, 10¢; B, 9¢, 5%
- Craig Polished Sheet Steel..... ₩ ℔, 8½¢

Galvanized.

	B. B.
Nos. 10 to 16..... ₩ ℔	4¢
17 to 22..... ₩ ℔	4¼¢
23 to 24..... ₩ ℔	4½¢
25 to 26..... ₩ ℔	4¾¢
27..... ₩ ℔	5 ¢
28... ₩ ℔	5¼¢
29 to 30..... ₩ ℔	6¼¢

English Steel from Store—

Best Cast..... ₩ ℔	15 ¢
Extra Cast..... ₩ ℔	16½ @ 17 ¢
Swaged, Cast..... ₩ ℔	16 ¢
Best Double Shear ..... ₩ ℔	15 ¢
Blister, 1st quality..... ₩ ℔	12 ¢
German Steel, Best..... ₩ ℔	10 ¢
2d quality..... ₩ ℔	9 ¢
3d quality..... ₩ ℔	8 ¢
Sheet Cast Steel, 1st quality..... ₩ ℔	15 ¢
2d quality... ₩ ℔	14 ¢
3d quality... ₩ ℔	12½¢
R. Mushet's "Special"..... ₩ ℔	48 ¢
" " Annealed..... ₩ ℔	75 ¢
" "Titanic" ..... ₩ ℔	30 ¢

METALS—

Tin—

	Per ℔
Banca, Pigs.....	22¢ @ 21¼¢
Straits, Pigs.....	21½¢
Straits in Bars.....	22½¢

Tin Plates—

Duty: 2.2¢ ₩ ℔.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC,	10	x14..	@ $6.50
" " "	IC,	12	x12..	@ 6.75
" " "	IC,	14	x20..	@ 6.50
" " "	IC,	20	x28..	@ 13.00
" " "	IX,	10	x14..	@ 8.50
" " "	IX,	12	x12..	@ 8.75
" " "	IX,	14	x20..	@ 8.50
" " "	IX,	20	x28..	@ 17.00
" " "	DC,	12½	x17..	@ 6.00
" " "	DX	12½	x17..	@ 8.00
Allaway Grade.....	IC,	10	x14..	@ 6.00
" "	IC,	12	x12..	@ 6.25
" "	IC,	14	x20..	@ 6.00
" "	IC,	20	x28..	@ 12.00
" "	IX,	10	x14..	@ 7.50
" "	IX,	12	x12..	@ 7.75
" "	IX,	14	x20..	@ 7.50
" "	IX,	20	x28..	@ 15.00
" "	DC,	12½	x17..	@ 5.50
" "	DX,	12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC,	10 x 14, 14 x 20..	$5.50	@	$5.60
	10 x 20..	....	@	8.50
	20 x 28..	11.50	@	12.00
	IX, 10 x 14, 14 x 20..	....	@	7.00
BV Grade.—IC,	10 x 14, 14 x 20..	....	@	5.60

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20.....	@	$5.65
20 x 28..... . . .	@	11.00
IX, 14 x 20.....	@	6.40
20 x 28.....	@	12.80
Abecarne Grade.—IC, 14 x 20... ..	@	5.55
20 x 28....	@	10 80
IX 14 x 20....	@	6 40
20 x 28....	@	12.80

Tin Boiler Plates—

IXX, 4x 26.....	112 sheets.	@	$13.35
IXX, 14 x 28.....	112 sheets.....	@	14.50
IXX, 14 x 31.....	112 sheets	@	16.00

American Terne Plates.—Apollo.

IC, 14 x 20.....	$6.25
IC, 20 x 28.....	12.50
IX, 14 x 20.....	7.25
IX 20 x	14.50

Copper—

DUTY: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ ℔. Manufactured (excluding all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake.....	@ 12 ¢
Ansonia grade Arizona.....	@ 11½¢
Ansonia grade Casting.....	@ 11 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
			Weights per sq. foot and prices per pound.							
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	..	....
48		96	22	22	25	27	29	33	..	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, per pound..... 22¢

Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.

Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.

All Polished Copper over 20 in. wide, 2¢ ₩ ℔ advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per ℔.
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot...	27¢
10 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce.....	32¢

Circles less than 8 inches diameter, 2¢ ₩ ℔ additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned..... ₩ ℔ 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier.	24¢ ₩ ℔
14 oz.....	25¢ ₩ ℔
12 oz.	27¢ ₩ ℔

Seamless Brass Tubes—

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ ℔ additional *Brazed Brass Tubing.* (To No. 20 inclusive.)

Above 5-16 inch to 3 inch, inclusive.....	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch.....	$1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	43¢ ₩ ℔
Bronze Tubing, 3¢ ₩ ℔ more than Brass.	
Discount from list.....	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28.....	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 28	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive.	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive.....	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20.....	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22.....	$0.26	$0.28	$0.30	$0.34
No. 23.....	.28	.30	.32	.36
No. 24.....	.30	.32	.34	.38
No. 25.....	.32	.34	.36	.40
No. 26.....	.35	.37	.39	.43
No. 27.....	.38	.40	.42	.46
No. 28.....	.42	.44	.46	.51
No. 29.....	.45	.47	.49	.54
No. 30.....	.48	.50	.52	.57
No. 31.....	.51	.53	.55	.60
No. 32.....	.55	.57	.59	.73
No. 33.....	.59	.61	.63	.82
No. 34.....	.64	.66	.68	.96
No. 35.....	.70	.72	.74	1.30
No. 36.....	.76	.78	.80	1.50
No. 37.....	1.00	1.02	1.04	1.70
No. 38.....	1.30	1.32	1.34	2.00
No 39.....	2.00	2.02	2.00	2.25
No. 40.....	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ ℔ advance.

Copper Belt and Hose Rivets and Burrs—

	Per ℔.		Per ℔
No. 5.....	49¢	No. 11.....	55¢
No. 6.....	49¢	No. 12.....	55¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive.....	17¢ ₩ ℔
Over 3½ to 5 inches inclusive.....	18¢ ₩ ℔

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive.....	18¢ ₩ ℔
Over 3½ to 5 inches inclusive	19¢ ₩ ℔

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 ℔.

Western Spelter.....	5¢ @ 5¼¢
Bertha (pure).....	8¢ @ 8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ ℔.

600 ℔ casks	6¾¢
Per ℔.....	7 ¢

Lead—

Duty: Pig, $2 ₩ 100 ℔. Old Lead, 2¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.

American Pig.....	4½¢
Bar	4¾¢
Pipe, subject to discount 20%.....	6¼¢
Tin-Lined Pipe, subject to discount 20%...	..1¢
Block Tin Pipe, subject to discount 20%.....	37½¢
Sheet, subject to discount 20%.....	..1¢

Old Lead in exchange, 3¼¢ ₩ ℔.

Solder—

½ @ ½ (Guaranteed).....	13½¢ @ 14¢
No. 1.....	11¾¢ @ 12¼¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson ..... ₩ ℔	11¼¢
Hallett's .. "	10¾¢@11 ¢

Aluminum—

Duty: 15¢ ₩ ℔.

No. 2 grade metal, in ton lots..... ₩ ℔	.75
No. 1 (guaranteed to be 98 % pure and over), in ton lots ..... ₩ ℔	.90
Lots less than 1 ton..... 10¢ ₩ ℔ additional	

Old Metals—

Prices Paid in New York.

Heavy Copper.....	₩ ℔	9¼¢
Light and Tinned Copper.....	₩ ℔	8¼¢
Heavy Brass.....	₩ ℔	7 ¢
Light Brass.....	₩ ℔	6 ¢
Lead	₩ ℔	3¼¢
Tea Lead.....	₩ ℔	3¼¢
Zinc.....	₩ ℔	3¼¢
No. 1 Pewter.....	₩ ℔	14 ¢
No. 2 Pewter.....	₩ ℔	7 ¢
Wrought Scrap Iron.....	₩ gross ton	$13.00
Heavy Cast Scrap.....	₩ gross ton	9.00
Stove Plate Scrap.....	₩ gross ton	6.00
Burnt Iron.....	₩ gross ton	6.0